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Indonesia: Qualitative Study on Innovation in Manufacturing Small and Medium Sized Enterprises (SMEs)

Voeten, Jaap; Achjar, Nuzul; M. Utari, Karina

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Qualitative Study on Innovation in Manufacturing Small and Medium-Sized enterprises (SMEs) in Indonesia

Exploration of Policy and Research Issues

Jaap Voeten (Tilburg University / j.voeten@tilburguniversity.edu),
Nuzul Achjar (Universitas Indonesia, Faculty of Economics and Business / achjar@gmail.com)
Karina M. Utari (PT Misha Cipta Nusantara / karina.utari@mcn.co.id)

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I would like to thank the enterprise owners and managers who gave up their time and were willing to talk and share their perceptions of daily realities, their stories and views with us. I also thank Prof. Dr. Nachrowi Djalal Nachrowi of the Universitas Indonesia, who enabled the research cooperation, and our research partners of the Institute for Economic and Social Research and Faculty of Economics and Business (LPEM-FEBUI), in particular and Dr. Nuzul Achjar and his colleagues Diah Permata and Karina Utari (co-author of the report) for organising and participating in the interviews in Jakarta. Of great importance was the assistance of our friends in Cirebon, Bapak Suratman, Ibu Nuning Fuad Hasyim, and the Indonesian Young Entrepreneurs Association (HIPMI) in Cirebon who also organised the interviews and shared their valuable observations and thoughts. A special thanks to the driver Bapak Alim who drove us safely around. The participation in the field work of our Dutch PhD candidate Annelies van Uden was equally constructive during as well as after the interviewing.

Jaap Voeten (Tilburg University/Radboud University Nijmegen)

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Introduction

The promotion of innovation in Low Income Countries (LICs) has recently appeared on the agenda of policy-makers and international development agencies. Many agree that innovation is crucial in these countries, because it is fundamental for growth in order to catch up with middle and high income economies (Chaminade et al., 2010). Current research, theory development and policy formulation to promote innovation, however, have mainly focused on innovation in the more advanced economies, whilst investigation of these issues in low income countries to date has been limited.

The 5-year research project '*Enabling Productivity and Innovation in Low Income Countries (EIP-LIC)*,' funded by the British Department for International Development (DFID) and commissioned to Tilburg University, aims to fill research gaps on innovation in LICs from an economic perspective. EIP-LIC aims to deliver robust high quality evidence from Africa and Asia on how to increase innovation and raise productivity in manufacturing SMEs, through a coordinated set of thematic and country case studies providing internationally comparable data. The countries of study include Kenya, Tanzania, South Africa, Ghana, Ethiopia, Uganda, Indonesia, India and Bangladesh.

EIP-LIC focuses on manufacturing Small and Medium-sized Enterprises (SMEs) in LICs. Promoting innovation in these enterprises has a particularly positive impact on development (Szirmai et al., 2011): SMEs are usually operating on the boundary of the formal and informal sector and have low levels of productivity and competitiveness. Compared to the agriculture and services sectors, manufacturing in LICs is typically characterised by a limited share of the total GDP. Innovation within SMEs in manufacturing enables these enterprises to raise productivity and grow, resulting in a better-balanced economic structure while generating employment opportunities for poorer groups and contributing to poverty reduction. Moreover, promoting innovation in domestic manufacturing is a route towards import substitution and increases the competitive (export) position of firms on the world market.

One part of the project focuses on a quantitative analysis of the internal and external factors of the innovation process within firms in all countries of study. Another part provides a complementary qualitative exploration of the policy and research issues in each country. This involves the development of a series of case studies of manufacturing SMEs. The research output of the qualitative reports, working papers and policy briefs are available at the EIP-LIC's website: <http://www.tilburguniversity.edu/dfid-innovation-and-growth/>

This report presents the findings of the qualitative exploration in Indonesia. It is targeted at the DFID project researchers as well as the broader academic community with similar research interests in providing ideas or supporting them to identify and/or validate research questions and hypotheses. In addition, it may provide useful bottom-up insights to policy makers within governmental agencies, firms and NGOs on innovation from the entrepreneurs' perspective. It is also targeted at SME owners and SME branch organisations, who will hopefully see their business and socio-economic and institutional context reality accurately reflected in the report.

The structure of the qualitative exploration reports is the same for all countries in EIP-LIC, enabling cross-country comparison of the research and policy issues. Thus chapter 1 is standard for every report, outlining the DFID project research challenges, approach and methodology. Chapter 2, by contrast, focuses on the country of study only and briefly summarises the latest trends in the manufacturing sector from secondary sources. Chapter 3 constitutes the main part of the report and provides the original primary qualitative data (cases) and analysis with regard to innovation in manufacturing SMEs in Indonesia. Chapter 4 of the report concludes with analysis of the data and the identification of policy and research issues with special reference to the 'Innovation Systems' and 'Finance for Productivity Growth' research themes of the project.

1. DFID research project challenges

1.1 Approach: complementing quantitative with qualitative research

EIP-LIC aims to deliver robust high quality evidence from Africa and Asia on how to increase innovation in manufacturing SMEs so as to raise productivity, through a coordinated set of thematic and country case studies providing internationally comparable data. The project takes an econometric approach within two thematic areas: ‘Innovation Systems’ and ‘Finance for Productivity Growth’. The research teams address internal capabilities and external institutional factors, institutions and policies that support or hinder the diffusion and adoption of innovation and finance raising productivity at SME firm level. Specifically, the project takes an ‘economics’ perspective on innovation, and involves econometric analysis of a set of variables concerning barriers at firm, regional and national levels and their causalities with the *innovative behaviour/capability of entrepreneurs* and subsequently innovation and productivity. This constitutes a reductionist and deductive approach in defining variables for analysis in which the impact of individual factors on innovation is assessed by applying quantitative econometric methods. The research methods include firm-level surveys in all countries of study (in cooperation with The World Bank), experiments and Randomised Control Trials (RCTs). The quantitative analysis will serve as a basis for identifying relationships between internal capabilities, external institutional factors and finance on the one hand and innovativeness and productivity growth on the other.

Applying quantitative methods in development research brings some limitations and challenges. In EIP-LIC, conceptual issues emerged, in terms of the definition and measurement of innovation and productivity in LICs. These may seem straightforward variables at first glance, but their measurement can be more complicated in the LIC context. Innovation may be manifested differently, not via high profile technological and radical breakthroughs, usually measured by R&D expenditures or patents (OECD, 2005), but by more incremental adoption and adaptation or new combinations of existing technologies (Szirmai et al., 2011). These forms of innovation are equally important for raising the productivity and competitiveness of SMEs in LICs.

Moreover, innovation research and theory development in recent decades have typically involved empirical material from advanced economies, such as the innovation systems literature of Lundvall (1992) and Freeman (1987), where innovation takes place within a relatively stable institutional and Science, Technology and Innovation (STI) policy context, ‘controlled’ and supported by established innovation system actors and innovation policies. In LICs, however, the contemporary institutional realities and formal/informal dual economic contexts are different and may involve other less visible or less commonly known factors and policies around SMEs affecting their innovativeness and how innovation manifests itself.

Therefore, the theory and associated policies of how innovation evolves within an innovation system in the institutional contexts in LICs may be different, which is increasingly acknowledged in recent innovation systems literature (Lundvall, 2009; World Bank, 2010). For instance, entrepreneurs are innovating by Doing, Using and Interacting (DUI) in fast-changing contexts, enabled by informal institutions and informal (social) learning. Applying the research variables on innovation and productivity in LICs from existing literature and theory (deduction) based on advanced economies, therefore, might not take all relevant variables into account. A more precise identification of variables might be obtained by complementing the selection with a broader understanding of contemporary realities and context on the ground in LICs.

Another research challenge in EIP-LIC concerns the interpretation of the quantitative survey research outcomes of the project, involving cross sectional analyses, amongst others, where attribution and explanatory issues among independent and dependent variables arise. Although control variables are

typically verified, the correlations cannot be easily translated into causalities in complex and dynamic contexts. This is particularly important for the interpretation of research outcomes at the policy level in the realities of the country concerned. A broader insight into how innovation processes and actor interaction mechanisms evolve might help to open the black box and analyse and interpret the quantitative outcomes.

In an effort to manage these challenges, EIP-LIC includes complementary qualitative research, involving an exploration and description of contemporary realities of innovation in manufacturing SMEs in the LICs. This aims at inductively identifying actual and relevant *research and policy issues* as input for the EIP-LIC research themes as well as for additional explanatory evidence supporting research output.

In operational terms, Tilburg University and partners conducted a series of case studies of manufacturing SMEs in each of the 10 target countries of study in the project. The holistic case study approach and method involves interviews capturing original insights, views and perceptions of SME owners and managers. Similar report format and comparable data will be used for all countries of study in EIP-LIC, enabling cross-country comparison to identify overall trends and patterns in innovation and productivity policy and research issues in manufacturing SMEs in LICs.

1.2 Case study methodology

The objective of the qualitative study of EIP-LIC is to identify relevant policy and research issues concerning innovation in manufacturing SMEs within contemporary realities in Indonesia. Applying a case study approach is particularly useful in this respect, since this method is an approach for inductively exploring and identifying concepts, noticeable similarities, trends and patterns of socio-economic phenomena (Yin, 2003).

The case study research in Indonesia involves a series of 14 interviews with managers and/or owners of manufacturing SMEs. This may seem a limited number to justify research validity. However, the approach usually involves in-depth rich and detailed descriptions and a multidimensional analysis of the complexities and linkages of a few cases to gain an understanding of the (socio-economic) mechanisms and processes of the case subject. In the case descriptions, innovation as an economic phenomenon is the case 'subject', whereas the unit of analysis is a manufacturing SME. The case description holistically explores the type and basic features of innovation within the SME, and reviews the impact on productivity and competitiveness over the past 2 to 5 years.

The data for the case descriptions are obtained via 'semi-structured' interviews with SME owners and managers. 'Structured' refers to the systematic review and discussion of innovation(s) in the firms, the *innovation process*, *internal capabilities*, and innovation system actors around the firm, including *formal institutions*, the *business system* and *informal institutions* (attached as Annex 1). These actors and institutions encompass formal and informal, private, public, and quasi-public institutions or organisations around the SME. 'Semi' refers to the interviewing approach of encouraging owners or managers to tell their story, and express their concerns and perceptions freely, without being confined to the 'questionnaire framing'. Of particular interest is what innovation means in the manufacturing SMEs in their context, and the less known favourable and unfavourable institutional conditions and barriers enabling or preventing it.

All interviews are recorded and transcribed. The data generated are entered and stored using qualitative data analysis software. The writing of the case is a step-by-step process of unravelling, ordering and organising the transcriptions into compact SME case descriptions of 3 pages following a similar format. The series of case descriptions are compared and analysed for patterns, differences and similarities in internal capabilities and socio-economic and institutional contexts. The findings are summarised as policy and research issues

that could serve as input for the quantitative research of the ‘Innovation Systems’ and the ‘Finance for Productivity Growth’ themes under EIP-LIC.

1.3 Selection of SMEs and fieldwork

The selection criteria for the cases included:

- The company is a formally registered SME. In the DFID project context, an SME is understood as a company with 10-100 employees¹, whereas turnover, assets and capital formation are not considered.
- The company is involved in manufacturing². The project follows the International Standard Industrial Classification of all Economic Activities (ISIC). In this standard, manufacturing is defined as the physical or chemical transformation of materials or components into new products, whether the work is performed by power-driven machines or by hand, whether it is done in a factory or in the worker's home, and whether the products are sold wholesale or retail. Included are assembly of component parts of manufactured products and recycling of waste materials. Moreover, given the pace and importance of the new technologies, the project considers software and mobile app development as a form of manufacturing to be included in the selection of cases.
- The company is a 100% Indonesian owned/indigenous firm. Foreign or joint ventures are excluded.
- The company introduced some form of innovation, preferably process or product, which resulted in increased productivity and competitiveness in terms of export promotion or import substitution. Other types of innovation may also be considered: management, business concept/practice, inputs, or functional innovation.
- Value creation within the company, as a result of the innovation, is essential. This may concern a significant productivity increase by reduced costs (pushing the productivity frontier - saving on labour, capital and input) or more sales and income due to the launch of premium products and competitiveness.
- Innovation process - idea, test, implementation and commercialisation - takes place in the firm and is initiated and owned by the entrepreneur. The SME owner appropriates the additional innovation value.

These selection criteria are defined in such a way that the selected cases represent the EIP-LIC target group: manufacturing SMEs. Moreover, the criteria assure a certain homogeneity within the selected cases, which will enable comparison of cases while supporting a certain validity of the identified trends or patterns. At the same time, allowing some heterogeneity, by including deviant cases, provides more contrast, and thus enables the research team to better construct and highlight divisions in the innovation process, linkages, system or mechanisms.

An essential element of the selection is the notion that types of SME innovation in LICs are not confined to technological (radical) inventions resulting from particular R&D investments and efforts. Innovation in manufacturing SMEs in LICs more often encompasses incremental adoption and adaptation or new combinations of existing technologies, products, marketing, management or business practices. Moreover, innovation often does not concern one type only. More often, an initial innovation enables and/or triggers other types of innovation within a firm; a new technology allows the introduction of new products, for instance.

¹ It is important to note that the enterprise size, in terms of number of employees, is not always a practical criterion. A significant number of Indonesian companies are struggling with fluctuating orders. These companies only have a limited number of permanent staff and hire day workers once they have secured an order. In the description of the cases, an exact explanation of the number of employees and their contract form is described.

² One deviant case, the land map consultancy business, is selected because of the notable (frontier) technological innovation, the drone.

1.4 Fieldwork

The qualitative data collection through interviews in Indonesia took place in greater Jakarta and Cirebon from 17 to 25 October 2016. The Indonesian research partners identified SMEs by tapping into formal SME and manufacturing associations and informal and personal networks. In total, 14 owners/managers were interviewed (see list attached as Annex 2). An average of 2-3 interviews per day were completed. The interviews typically took 1.5 hours.

The research team respected a set of ethical codes in conducting the fieldwork. These involved a transparent explanation of the project and the purpose of collecting the data to the interviewed owners and managers. The research team provided assurance that the firms' data were kept confidential, with SMEs and interviewees anonymised in the descriptions. Before publication, a draft version of the report was first sent to the SME owner/manager to check whether there were any issues mentioned that he or she did not agree with, or felt uncomfortable with.

During the interviews, the SME owners and managers expressed interest in learning more about the project and about innovation in other SMEs. The team sent a copy of the final report to all interviewees, expressing their intention to maintain contact, and to 'give something back' in terms of participation in future policy debates, policy dissemination, contacts or networks. The final reports are to be accessible to the public and downloadable via the project website.

The original recording of the interviews and transcriptions are available for the project researchers - eventually open access - for further analysis and development of scientific papers and journal articles.

2. Introducing manufacturing SMEs in Indonesia

With a population of 243 million in 2016, Indonesia is the largest economy in Southeast Asia. The people range from rural hunter-gatherers to a modern urban elite; traditional markets and a modern advanced economy co-exist. Ethnically it is highly diverse, with more than 300 local languages. The political context has been stable since Indonesia made the transition to democracy after the Suharto period. Power has been devolved away from the central government and the first direct presidential elections were held in 2004.

In economic terms, Indonesia has undergone a resurgence since the 1997 Asian financial crisis, becoming one of the world's major emerging economies. In the past decade, the GDP growth rate has been constant at around 5% (World Bank, 2017). It has seen a slowdown in growth since 2012, mostly due to the end of the commodities export boom. The GDP per capita (PPP, in 2016 dollars) therefore grew slightly in recent years from \$10,900 (2014) to \$11,300 (2015) and is estimated at \$11,700 (2016).

The country attracted substantial foreign investment because of the large consumer base, rich natural resources and political stability. However, drawbacks are the poor infrastructure, corruption and growing calls for economic protectionism. Indonesia still struggles with poverty and unemployment, a complex regulatory environment, and unequal resource distribution among its regions.

2.1 Small and medium-sized enterprises (SMEs)

The term Micro, Small and Medium Enterprises (MSMEs) is more commonly known in official documents in Indonesia than SMEs. The term includes also micro and household enterprises (which is not the target group of EIP-LIC). Both terms are used interchangeably in the various research and policy documents. In fact, the diversity in definition and classification of small firms across countries confirms a constraint in analysing SME development in research and policy documents.

MSMEs constitute the dominant form of business organisation and represent more than 99% of the total number of firms in Indonesia, 97% of employment but only 57% of value added. While micro enterprises are mostly in agriculture, small firms dominate in the trade and hotel sectors. Medium sized firms account for only a small part of MSMEs. This missing middle in the production structure is common in South-East Asia (Mourougane, 2012). An interesting feature that should be highlighted is the proportion of women owned MSMEs in Indonesia. Women own 52.9% of micro, 50.6% of small, and 34% of medium-sized enterprises (IFC and USAID, 2016).

MSMEs mostly operate in the informal sector in Indonesia. Only 25% are legally registered when they start operating. Red tape, high tax compliance costs and rigidity in the formal labour market hamper formalisation. Reforms in these areas are unlikely to be sufficient to foster formalisation, if firms expect no benefits from registration (Mourougane, 2012).

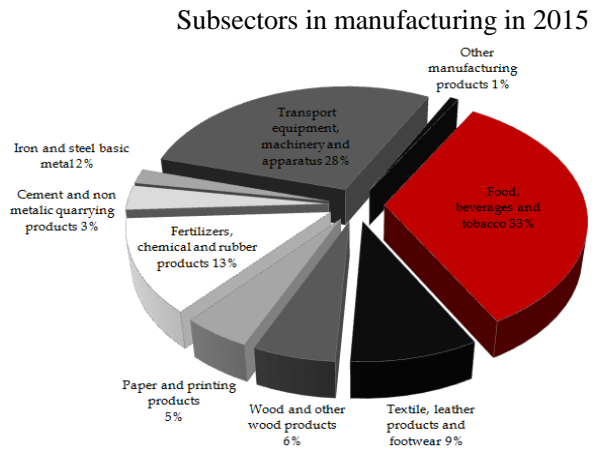
Currently, Indonesia is ranked 88th on the Global Innovation Index (Dutta et al., 2016). This rank is considered quite low in comparison with other countries in Southeast Asia. One of the reasons might be the vast representation of micro enterprises within the SME classification.

2.2 Manufacturing sector in Indonesia

In 2014, the share of agriculture in Indonesia's GDP was around 13.34%, industry (including manufacturing, with mining, oil and gas the dominant elements) contributed approximately 41.9% and the services sector contributed about 42.27%³.

Indonesia's manufacturing sector, excluding mining, oil and gas, was worth IDR 2,097.7 trillion (approx. USD \$156 billion) in 2015, contributing 18.1% to the country's GDP. However, this higher contribution of manufacturing to the economy is mainly caused by the declining roles of oil & gas, commodities, agriculture and mining within the Indonesian economy. These sectors have all seen their roles decline amid persistently low commodity prices⁴.

Today, while Indonesia's agriculture and services sectors have largely been privatised, the contribution of private manufacturing companies to manufacturing output and to employment remains under pressure from state-owned enterprises. Several observers note that with slowing economic growth and rising labour costs, Indonesia may lose its status as an attractive destination for FDI, offering low costs, receptive governance, and increasing integration with key trading partners.



2.3 Policy environment

To stimulate GDP growth, the government has started to diminish the domination of the oil and gas industry in the GDP. This aims to reduce Indonesia's dependency on its resource based economy. One of the steps taken by the government is to promote the contribution of SMEs in supporting alternative industries. Policy makers and economic observers see Indonesia's potential comparative advantage in labour-intensive, light manufacturing SMEs. This advantage has been crucial to the extraordinary successes of numerous East Asian economies that comprise the 'East Asian Miracle'. Household firms, which account for the bulk of Indonesia's private sector, are generally too small to compete in foreign markets. State enterprises are generally too inflexible and inefficient to keep pace with dynamic global demands. Experience has shown that it is private SMEs - large enough to be efficient, small enough to be flexible - that are as the key to rapid export-oriented industrialisation.

Within the manufacturing sector, there are ten industrial priorities defined in policy: food processing; pharmacy, cosmetics, and health equipment; textile, leather, and shoes; automotive; electronics and ICT; creative industries; basic chemistry for the energy sector; agricultural processing; energy generation; machinery, components, and supporting industries; basic metals and non-metals minerals. The efforts made by the government can be divided according to the target problems to be solved.

³<https://www.statista.com/statistics/319236/share-of-economic-sectors-in-the-gdp-in-indonesia/>

⁴<http://www.indonesia-investments.com/nl/news/todays-headlines/manufacturing-industry-indonesia-contributes-18.1-to-gdp/item6527?>

In general, SMEs face the dual problem of poor access to finance and marketing, limiting their potential to expand and thus also to innovate. In response, the government has ratified policies and programmes involving several departments and institutions working in collaboration to resolve these two concerns.

Lack of access to finance is addressed by a funding facility for SMEs offered by banks, whereby loans given to SMEs are guaranteed by the government through an allocated budget for SME development. This allows banks to increase their willingness to give loans to SMEs. Marketing support for MSMEs is provided by the Ministry of Cooperatives and SMEs, which has established a trading house for SMEs and assists them in exporting (GIT, 2016). Export support is given through training and consultations on export permits, process, and logistics. Several regional governments also provide funding for SMEs to market their products at national and international exhibitions.

However, despite the various sources of support available, many SMEs have still received no benefit. As an emerging economy, budget constraints may be one reason why the programme outreach is still low, so this problem has been addressed by declaring the priority industries that they will target. According to the IFC and USAID (2016), poor communication regarding these sources of support has made the outreach less effective, so dissemination of information is a crucial concern in broadening the scope of the SMEs being supported.

3. Empirical data: Cases of manufacturing SMEs in Indonesia

This chapter presents eight cases of SMEs whose owners and/or managers were interviewed in Jakarta and Cirebon in the period 17-25 October 2016. The two sites were selected as examples of a major city and a typical secondary town in Indonesia.

The selection of eight out of the fifteen interviews was completed with a view to providing homogeneity in terms of the SMEs in manufacturing as well as to present a broad overview of the issues from the various interviewees' perspectives. The write-up format is similar for each case: a description of the company's history, the recent developments, the internal capability and external environment (which may include formal institutions, business systems and informal institutions). Notable issues outside this framework, relevant for EIP-LIC, which were stressed by the owner and/or manager of the SMEs, are also included.

3.1 Textiles and garments – pupil and student backpacks (52 employees)

This company produces fashionable backpacks for high school pupils and students. A couple started the business in 2014. The wife, who is in charge of management and design, studied information technology at the Institut Teknologi Bandung (ITB) – *“my education is not related to our business.”* Her husband handles online marketing and product development activities. The couple mention that there are a lot of women entrepreneurs in Indonesia – *“90% of the time, when we meet another entrepreneur, it is a woman.”* There is not really a gender issue in Indonesia, according to the owners, indeed, *“it is more of an advantage if my wife goes first.”*

They started their business from saved capital, which involved some 150 million rupiah (12,000 USD). They had a small tailoring business in Solo beforehand, producing ladies' bags as subcontractors for large companies. At a certain point *“we thought we would move on with the expertise we had developed over the years. We asked ourselves, ‘Why don't we make our own brand?’”* They saw a business opportunity in the student backpack market because *“every school kid and student has one.”* They first tested a few samples with their brand name and put them for sale in several shops *“and it turned out that the customers liked our style.”*



Since then, they decided to develop their product further on a professional and commercial basis. In 2014, the couple left Solo to establish a production facility in Bandung. Today, an average of 42 people work in the production team, depending on the size of the orders. In 2015, they opened their head office in Jakarta Tangerang (on the west side of greater Jakarta) *“because most of the department stores have their head offices in Jakarta. It's much easier for me and my marketing team to knock on their doors.”* The Borobudur department store, one of their major clients, has a head office in central Jakarta and 12 branches all over Indonesia. In total, the company employs 52 people at present.

The head office handles product design, management, marketing and distribution. The production facility in Bandung is managed by the wife's sister – *“it is a family business.”* After the backpacks are produced in Bandung, they are reviewed for quality in the head office.

Their products are distributed in around 100 department stores and book stores in various cities in west and central Java: Jabodetabek, Jakarta, Bogor, Depok, Tangerang and Cileduk, to name a few. They also sell bags in the traditional market, in particular small traders and small book shops. Although manufacturing their own brand designs is their priority, some 10-20% of the orders are customised bags for clients from companies, universities and schools. Schools do a pre-order every year for their new students. However, *“our production capacity is limited and we need to supply the stores.”*

Internal capability

The Bandung facility has only basic technology, according to the owners. They have sewing machines and a cutting machine for layers of fabrics, *“not really very advanced like in the big textile factories, but for our small company it is quite okay.”* They recently acquired a digital printing device – *“if the printing is for small surfaces, we can do it by ourselves, but if it’s the whole bag, we will subcontract.”* The machines are made in China.

It is easy for them to recruit suitable employees for the facility in Bandung, which is located in an industrial textiles cluster, with a lot of skilled workers available. An additional advantage is that there is no need to train the workers they engage – *“we just tell them what we expect and they do it themselves.”*

It is not an option to move the Bandung production facility to Jakarta, partly because of the availability of raw materials. There are many exporting textile manufacturers in Bandung, who sell high quality fabrics in large as well as smaller quantities, so *“buying it there is easier and cheaper.”* Another advantage is that labour costs are cheaper in Bandung.

The marketing manager of the company targets big malls as well as traditional markets, organising sales promotion teams to visit the department stores. She trains these teams of ten young employees, covering product knowledge, duties and targets, and how to handle customers. The team visits several of the most profitable department stores in West Java, approaches clients and demonstrates the product features, like the rain cover and laptop pocket, as well as the quality of the sewing – *“if the customer knows about the material, they know that it is good quality.”*



The owners face a shortage of staff for sales teams – *“it’s easy to get people on board, but then it’s hard to retain them. Once we push them to achieve a target, they simply leave for another company.”* Each sales team member has their main wage and a commission of 20,000 rupiah (1.5 USD) per backpack, while the price of the backpack itself is 150,000-300,000 rupiah (11.25-22.5 USD).

Apart from the production facility in Bandung, the owners involve households in Tangerang to produce and sell their bags. They normally just sell 1 or 2 pieces a month on the traditional market. Being a subcontractor, these households could obtain a regular income compared to making their own bags.

Innovation

The husband is in charge of design. Most of the ideas come from the head office *“because it is like the R&D centre.”* He browses the internet to source ideas and new models, and sometimes visits a market to find what models are new and sell well. He also gets ideas from his employees – *“after work and during the weekends, they go shopping and see the new trends in the market.”* They discuss these ideas as a team – *“I’ve seen a nice bag in that shop, maybe we can make it.”* Sometimes he changes the material or adds accessories – *“we*

copy and modify, and put on our market brand.” He explains that he has a “good feeling” for what does and does not sell well in the market.

They have registered their brand name, but not to protect against copying. Sometimes competitors do copy their bags – “*in Indonesia, it is all like that.*” The new backpack designs are developed in the head office. Once a sample is ready and tested, the new design goes to the production facility in Bandung. Sometimes the new products fail. To prevent big losses, they initially produce a batch of only 100 pieces – “*if the model does not sell well, then we never create it again.*”

The husband is trying to develop the business through the online store, which has been running for a few months now, and sells via websites like Amazon, eBay and Alibaba. Around 10% of the products are sold online – “*it is still a new way of marketing for us.*” Meanwhile, the wife and another manager conduct the direct marketing to department stores.



External business and institutional environment

There are many competitors in the market – “*and many have been there for a long time.*” It is common practice for these firms to offer discounts of 50% or more. The company cannot sell at that price, because their backpacks are of good quality, and they do not want to cut prices. In order to compete, a 30% discount is possible if there are left over products, or in combination with gifts such as a magazine or a book. It is a marketing strategy that works quite well, “*because the mums look at the backpack and they think they will get some magazines for free.*”

They have serious plans to export and have started the necessary preparations. Earlier, they presented their products at an international expo and secured some initial orders from Jeddah, Vietnam and China – “*but since I haven’t got all of the documentation, I cannot export yet.*” At present, there is still one legal document outstanding, which requires paperwork from several departments, “*which is very bureaucratic. This makes me a bit impatient.*” During the expo, a representative from the Department of Trade confirmed that the products are of export quality. The female owner is to attend a training course on export organised by the Department.

It is likely that they will borrow working capital from the bank for the export business. Indeed, several banks have approached them with offers – “*banks go to companies like ours because they think it is a potentially profitable business.*” The banks offered to lend 500 million to 1.5 billion rupiah (38,000-112,000 USD) with an interest rate of 9% per year.

Regarding the regulatory environment, getting a business permit is easy in Indonesia, according to the owners. New entrepreneurs just need to complete the procedures. They do not have much difficulty with permits and taxes. They just follow the rules and hire a consultant to complete the tax and administrative forms.

The couple want to buy land in Tangerang for another production facility. As a special social project, they have in mind to employ older orphan children. They have contacted an orphan foundation already, and aim to train the children to support themselves independently of the orphanage.

They were selected as one of the example SMEs invited to meet the mayor of Tangerang. A good relationship with the mayor means that they are able promote their products along with other products from Tangerang – *“Ibu Airin is quite aggressive in promoting local products.”* The company has also established links with universities, and takes interns from vocational schools. They are part of the University of Indonesia’s SME centre. She registered *“to acquire management skills, for marketing, because I realise that I just have a small business and I want to grow. I want to learn anything. One of the ways to do that is to go to the SME university of Indonesia.”*

3.2 Wood processing – rattan furniture (60 employees)

This company produces rattan furniture and was established in 1978. It started to export to other Asian countries shortly after this, notably to Japan. The company is located on the eastern side of Jakarta. On its premises, there are several large production halls with basic saw and sanding machines *“because the work is basically manual.”* The interview is held with the marketing manager, who is de facto the managing director of the company.

The company produces rattan chairs, tables and sofas to order for the export market. The rattan products are combined with other materials such as (goat) leather, textiles, metal and even banana leaves. The processing of these additional materials is not much of a problem and does not require extra skills.

The raw rattan materials are sourced from Kalimantan and Sumatra and purchased from middlemen in Jakarta. There is little price fluctuation – *“it only increases with the labour price”* – and sufficient supply – *“it is not a limiting factor.”*

There were originally a lot of rattan companies in Jakarta – *“like more than 1,000 or so. But now we’re left with no more than 50.”* The marketing director explains that Cirebon, a secondary town some 150 km east of Jakarta, is the centre of rattan production in Indonesia today. Cirebon has lower labour costs than in Jakarta, *“but we are more organised.”* The company also managed to remain in business because they changed their staffing system (further explained below) – *“otherwise we would not have survived.”* The company’s main market used to be the US, but now it is the UK.



Via an importer in the UK, the company supplies 80% of its production to Mark & Spencer. The supply used to be big but *“over the past 2 years, it has dropped a lot, just half of the previous export volume.”* Supplying to Marks & Spencer means that the company is subject to an international audit every year, which covers a set of environmental, social and safety regulations, to which *“it is not easy for the company to comply.”* The audit team comes, checks and, if the outcome is positive, the company gets an audit report.

The remaining 20% of production is exported to Asian countries. The marketing manager is trying to diversify the client base. She finds that it takes a long time, *“especially because we aim at the middle to upper market.”* After presentations at exhibitions, it sometimes takes 2 years before interested traders actually place orders.

The rattan furniture market fluctuates a lot – *“sometimes our orders for supplying furniture are low for months and then go up again.”* The number of workers is therefore flexible: on average, 60 workers have worked in the production team over the past 5 years. In the 1980s, the company had about 700 daily workers. At that time, the company was producing furniture of medium quality. Today it is more the middle and upper end – *“we sell less quantity but at a higher price.”* The turnover is lower but still generates a profit.

Internal capabilities and innovation

The company is owned by an Indonesian holding company in Jakarta. The shareholders all belong to one family – *“it’s a kind of family business.”* The holding company has other businesses as well, such as distribution of shoes and health and cosmetic products.

Because the business is slow at the moment, the holding company is not seeking to hire a director – *“maybe later, once the business growing again.”* The marketing manager runs the business and discusses management issues with one of the family members of the holding company – *“I handle everything in the factory.”* The marketing manager learned management skills by experience. Previously, foreign experts from Greece and the Philippines were hired as directors. She used to work with them and learned how to run the operation and export.

Five years ago, the company changed its human resources practice from permanent day workers to piece workers in order to survive in the fluctuating market – *“when there are no orders we don’t keep the production workers. It is too expensive.”* Only 13 staff in management and administration have permanent contracts. The shift to piecework was the result of the increasingly competitive market. Recent years have seen new competitors from Vietnam, China and other developing countries *“and the cost of wages has increased while the rattan furniture market has gone down.”*



When the company shifted from permanent work contracts to piece work, the employees were not happy – *“because it affected the way they worked, but we have to go that way, otherwise we can’t compete. Most companies work like this.”* The instructions and HR policies associated with international audit are posted on boards in the workshop – *“all the workers can read them.”*

Once an order is received, it now takes longer to start up the production process. The marketing manager is in close contact with the buyer in the UK to coordinate yearly planning. Usually at the year-end period, demand drops, *“but I ask them to outline the planning for the next year. Then I can start preparing the stock of material and the planning of workers.”* Sometimes the company loses skilled workers.

The marketing manager has noticed that productivity has increased compared to the past arrangement with daily workers – *“workers are not like machines. They do not always work. If we do not supervise them, they work very slowly.”* In the past, the company had to appoint a supervisor, which meant higher labour costs. Today, there is a quality team that prevents the workers producing too fast with low quality. The quality team explains to the workers how the furniture and new designs are to be constructed, providing a sample to follow.

When new workers are recruited, the company has to train and instruct them. The company has a probation period – *“we first pay the new worker daily during their training.”* After 3 months, they evaluate the worker

and, if they are satisfactory, the person becomes a piece worker. The recruiting strategy is to ask existing employees – *“when we need more workers, we ask them if they have friends or family looking for jobs.”*

The UK buyer provides usually provides designs, or sometimes the marketing manager will propose one.

She presents the drawing and develops a sample. The marketing manager goes to fairs in the US, UK and Germany – *“we are trying to collect ideas and see current trends in furniture design.”* From the ideas picked up at fairs, the R&D department suggests designs and manufactures samples.

The company cannot make the production process more efficient with machines or technology because most of the products are handmade – *“if we use machines, the end product will not be the same.”*



External business and institutional environment

The holding company is considering new investments in production capacity, but there are some regulatory issues with the government. The company was established at its current location when the area was not designated as a residential area, but since the government changed the designation to residential, *“now we have a problem extending our licence.”* The company is thinking about moving to a cheaper location, but there is a lot of cost involved – *“at the moment we still trying to work here.”* The government is not assisting them to find another location, *“which they have to, according to the regulations, they have to help. But in fact, it’s not happening.”* They now have a licence extension for a further 3 years. But after that, the future is uncertain – *“if there is a change in government, it will change the regulations too.”* There is also conflicting understanding between central and local government – *“the central government says it’s ok to stay here, but local government says it’s not.”*

The company has credit from the bank and they can afford it. The interest rate is manageable.

Sometime they undertake subcontracted jobs for other companies, depending on the order portfolio. *“If I can help, I will help. If we’re already full with our own work, then we cannot.”* They are currently doing a subcontract order to help out a friend from Cirebon – *“they supply to IKEA, but they have a capacity problem, and they asked us to help.”* The marketing manager does not want to produce for IKEA, since *“they give a price that is really too low.”* The IKEA agent has visited many times, but she never agreed with the price.

The position of women in the Indonesian business environment has become quite normal, according to the marketing manager. Women can speak and *“men accept that women can do everything.”* She does not really see gender issues – *“like here in our factory, we also have a supervisor who is a woman. She is accepted here by the workers.”*

Regarding the future, she is confident that the furniture industry in Indonesia will not disappear. However, she sees the importance of changing products and production techniques – *“we have to be more flexible. Right now we are always prepared to accept any request from the buyer.”*

3.3 Paper printing – paper bags (25 employees)

This printing company produces a variety of paper products including books, flyers, leaflets, calendars and printed paper bags. It is located in a busy street on the eastern side of Jakarta, within the largest cluster of printing companies in South East Asia. It is a family business run by the father, mother and a grown-up son. The interview is held with the son.

The parents started the business 15 years ago. His father previously worked for a printing company and decided to establish his company *“to have something of his own.”* He bought a special printing machine which only he had in the area. *“When they first started, it was easy because there were not a lot of competitors.”* Acquiring business permits and navigating government regulations were also easy at that time.

At present, the son and his mother run the business, while his father is involved in a less active role. They serve different customers in the Indonesian market, mostly restaurants and some big companies (Guess T-shirt, VNC shoes) for exclusive printed paper shopping bags. There are 25 people working in total in the print workshop, of which 5 are in management and administration and 3 in the courier service.

Initially, the son did the marketing to secure a network of customers, but now *“I think we have enough. If I get more clients, I can’t handle the order levels.”*



Customers find him via word of mouth. He has his own network of customers who actually never come to the workshop. The clients send their designs by e-mail – *“but for my mother, they always come here.”*

Internal capabilities and innovation

The mother and son produce and sell the same products using the same machines – *“sometimes it is difficult to coordinate that.”* They have purchased several specialised printing machines, which other companies in the area do not have. However, they do not have high quality cutting machines, so they subcontract *“the paper cutting specialist work”* to other small companies nearby. He has a special machine for printing thick materials – *“not everyone can print on thick material like this. But I can do it, so I have my own clients.”* Printing on thick paper also requires a special technique.

The company has invested incrementally in new technology and machines. The printing machines were an important investment. It allows them to offer a more competitive price in the market as they do not need to subcontract the plate making steps. Originally manufactured in Japan, Germany and China, the machines are bought from Indonesian importers. The son gets new ideas for technology, printing techniques or available papers by going to exhibitions in Jakarta, or via the internet.

The average age of the staff is around 20-30 years old. New employees initially work as assistants, and are trained by an experienced machine operator. After several weeks, they usually get sufficiently skilled to become operators themselves. *“Unfortunately when they become operators, they often leave and go to work for other companies,”* perhaps seeking higher salaries. There is a shortage of machine operators in the printing cluster. The company regularly recruits operators who very often leave after training – *“it’s very tiring.”* To find new staff, they just put a banner outside, and people come. They also advertise vacancies in the newspaper. The company’s supplier provides training for an operator if a new machine is purchased, *“but*

this is not the case if we buy second-hand.” This means the son is constantly looking for people who can operate the machines.

The son is also actively trying to retain the staff. During the holiday season, they get extra pay and 2 weeks off. *“Sometimes they do not return without saying a word, they’re just gone. This is because they already have the extra money.”* He attributes this mind-set to their lower education levels, which are normally high school qualifications.

The company has a wage system for the workers. The workers and operators have a monthly target. If they achieve beyond this, they receive a bonus. Accommodation is also provided for workers who perform well.

The company does not have written contracts because staff turnover is high. *“It’s useless to make a contract. The workers do not care. Every Saturday they take their salary and on Sunday they are gone sometimes.”* The government does not check whether they have an employment contract.



Even with a contract, it is useless to sue them – *“if they want to go away from this company, they just do.”*

External business and institutional environment

The company was originally located in another area of Jakarta. They moved to the printing cluster because of the many other printing companies in the neighbourhood – *“to locate near the competitors, because that is where most clients are.”* The company is confident it can beat the competition. Their prices are comparable to those of their competitors, but production and delivery is faster – *“we have this plate printing machine that prints much faster.”*

There is a lot of collaboration within the cluster because the companies are specialised. If there is a job the owner cannot take on, he subcontracts it to another firm and takes a margin. When it works the other way around, he usually gives a lower price to other businesses that ask him to do plate printing. They also help one another with machines and parts.

There are various types of businesses in the cluster, ranging from informal family firms to SMEs and large companies – *“it’s just that their capital is bigger so they have more to invest in machinery.”* The informal companies do not pay taxes and can therefore produce more cheaply. This is not such a problem for the company because their clients are larger firms, who need formal invoices with a tax number – *“that is why they cannot go to the informal businesses. It’s a different market.”*

A bank loan was needed to purchase the most recent machine, but it was not difficult to get the credit. The bank staff came to the company to survey the business before granting the loan, at an interest rate of 10% a year for 1 billion rupiah (75,000 USD) over a period of 3 years.

The son mentions a lack of support from the government – *“I think the government doesn’t care about us.”* The government just makes sure that the taxes are paid. He explains that they will come at random and check the finances *“and if they spot one little problem, they will make it bigger. They will look in great detail. And they expect something.”* According to the son, this is a problem not with the government but with the local official concerned. The manager is not into bribing – *“if you start giving money, it will never stop. And they*

come back and ask for money again.” The central government is very strict on combating corruption – *“that’s why we don’t want to give them money like that.”*

There is, however, one particular difficulty relating to the government: a new land zoning plan, which reserves the neighbourhood for offices and residential purposes only. This means that all the printing companies and workshops will have to leave the area. The government recently launched this new regulation and will ask everyone to leave. He does not know what to do – *“they will make this as an upper class office area.”*

The company will no longer be allowed to retain the production facility at their current location, only the office. The family owns the house and the current workshop.



The government did not propose an alternative location – *“that’s why I can’t change my machine at this point in time.”*

There is a printing house association, whose representatives have already met with the local government – *“they can’t do anything, they said.”* Everything at central government level is still unclear. A group of print workshop owners sent a letter to the governor of Jakarta, asking him to prevent it – *“but he said he cannot do anything because the rules are from the central government.”* The problem is also political because the governor is at the end of his term *“and the political situation will be a bit unstable.”* The governor can only help with the extension of business permits for those companies that have been established for a long time. For new companies, it is not possible to extend their permits. The government suggested moving to an industrial area, but this area is very expensive and not designed for small and medium-sized enterprises – *“we simply can’t afford it.”*

3.4 Consultancy – land maps (12 employees)

This company is not manufacturing, but producing customised and specialised land maps from satellite images for civil engineering (oil/gas, palm oil, mining coal and bauxite), construction project developers and the government. There are 12 people working in the company.

The maps developed by the company present detailed geographical information about land surfaces, plantations, forest, shrubs, water bodies and open space. The customers from industry and government can do an accurate assessment for their land projects and planning – *“they can find out what land is free for them to buy.”* For the palm industry, the customers can count accurately how many trees they have. The government uses the maps for conservation, to plan residential and industrial areas, for instance. The original satellite data and maps come from USA, France, and Japan.

The owner is originally from Yogyakarta and is a graduate in electronic engineering from Gajah Mada University. He worked for 3 years for a company in Jakarta, then started his own business in 2008 because he wanted to be independent. When he was young, *“I always had a dream to open a small business.”* He comes from a modest family background. His parents were civil servants – *“I saw my father, and I don’t want to be like them.”* They were at work very early in the morning and returned late in the evening – *“we*

were not close to our parents, so I don't want to live like that. I want to manage my time." The office is 2 km away from his home, which is very comfortable. He enjoys having his own business and the freedom this brings. *"I can manage my time by myself. I pick up my children from school before 6 and we go home, not far from here."*

Innovation

In recent years, he has faced problems with the satellite images – *"the satellite imagery is very high elevation, 600 km above the ground. The main problem is the clouds. We are in a tropical area so the clouds are always there."* The owner explored new technology to get better images as input data – *"we have to innovate to produce imagery that is clearer and sharper than satellite imagery."*

He came across the existing technology of a drone or unmanned aerial vehicle, carrying electronics and camera equipment. This equipment is available on the international market. However, a professional drone costs US\$ 600,000, including the hard and software systems for capturing and automatic piloting – *"it is very advanced technology and too expensive for us."*

He contacted one of his friends in Yogyakarta from his studies in electronic engineering. He found a thesis from a geodetic engineering student from Gajah Mada University. He also contacted a friend in the aero modelling community. His friend has the experience to develop the craft – *"this is not my ability to make a drone."* The drone was designed specifically for producing maps. They developed their own drone, which has the same ability as the factory products from German, Japan and the US – *"we can produce this system for US\$ 6,000."*



"Now we can produce our maps much more cheaply for our customers." The images are sharper and clearer because the drone flies below the clouds at 300m. Moreover, the profit margin for the company is much higher. For satellite imagery, around 70% of end product turnover goes into buying the original satellite data and maps. For the drone images, this is not the case. *"Next week we are going to West Java in Kuningan, Kertajati International Airport."* The international airport for West Java is under construction. The drone will capture the construction progress, including 8,000 hectares of the area.

Internal capabilities

The owner has an engineering degree and does most of the management. He learned to manage by doing and *"making a lot of contacts with other professionals."* Concerning the technical details, the owner acknowledges that his employees are much more knowledgeable than he is. He has the overall idea and his staff have the expertise to make it work – *"my time is dedicated to selling, presenting and managing."* The owner employs a tax and financial consultant to advise his administrative staff in financial management and tax reporting. The consultants teach the staff to report correctly *"and to avoid fraud."*

The owner feels that he has a good team. Sometimes there are fewer customers, but *"it is not an option to fire them."* The main problem is sales, not production efficiency. All the staff come from Gajah Mada University in Yogyakarta with a background in geomatics and geodetic engineering. The owner has to train new employees for at least 2-3 months.

There is little staff turnover, although *“in 2016 I had three production staff who resigned.”* These were key personnel. The maps are handmade, and the staff gain a lot of knowledge from particular clients or assignments to develop the maps – *“I cannot just copy and paste that knowledge.”* The owner finds it difficult to find loyal and bright staff. Loyalty is key for him – *“I try to use my intuition in the selection of staff as regards loyalty.”*

He sees an additional problem of several of his female staff leaving because they got married. *“In Indonesian families, the women are expected to serve their husband, grandparents and the children.”* Whether a young married woman will continue to work *“depends on the husband.”* *“I try to make an offer to them, please do not resign from this company. Let’s say you can work at home, so I can deliver the data and then work for me.”* But in this situation, the quality of their work is reduced. The owner’s wife also has a day job, which he feels is important. They divide the work of caring for the children.



External business and institutional environment

When the company started satellite imagery and map producing in 2008, there were few regulations. Local and provincial government units often placed profitable orders. *“Starting in 2012, the central government launched new regulations.”* From then onwards, it began to internally coordinate the supply of maps. All satellite images are now managed by the central government, so the company can no longer sell maps to local and provincial government agencies, only to the central government – *“it is a centralised process.”* Due to this new regulation, the company lost 40% of its orders from government agencies.

His current clients are mostly industrial firms. He can only get contracts from the central government through tendering – *“we tried to tender but never win.”* This is because of personal contacts – *“who wins the tender is already decided before the tender procedure starts.”*

The good news is that this regulation is only for satellite images, not for drone images – *“the drone is our solution.”* A previous customer has now switched from satellite to drone images. *“I can’t predict the future to say anything definite, but we are optimists in this kind of job.”* At present, he does not have competitors that are copying his technology – *“I am actually copying my competitors.”*

His network of friends with a geoscience background is important to get up to date information on the latest technology developments and improvements. The international industry of geoscience tools and applications and the suppliers of hard and software are key developers of knowledge – *“they know more about the new technology that’s coming.”* He feels it is the industry and not the universities who are key to this – *“development in the universities is not as up to date as in industry.”* Other sources of information are online magazines, international journals and, most importantly, international exhibitions.

In the past, he considered taking out a bank loan. It is standard practice in Indonesia for the bank to visit their account holders to offer them credit, even before it has been requested. The owner sometimes needs credit as working capital for certain projects. His bank came to him and offered him credit, but in the form of a long term loan over 4 years. He was only in need of credit for 2-3 months – *“the amount of interest seemed reasonable for me.”* However, it appeared that *“what the sales woman said and what was written on paper were different, so I said no.”* Moreover, the owner does not want credit because the interest rate of 1.5% per

month is too high in his view – *“it will decrease my profit in the long term.”* Now if he needs money urgently for working capital, he just goes to an auction with his gold – *“it’s helpful for me sometimes.”*

Recently, there has been a new regulation launched by the local government that offices must be established in a specially designated area. However, the firm’s current location is in a residential area. Moving the office will involve a lot of rental expenses. The owner found a creative solution by establishing a ‘virtual office’ – *“I can still be here but our registered office is in the zone.”* The local government has accepted that for the time being because it seems that the regulation will change again soon.

The bureaucracy around taxes and permissions is onerous – *“that’s another trouble.”* Starting in 2008, it took 4 years to complete the permit procedure to establish the office. In order to meet their requirements, he needs to employ only people with certain certification. The advantage of registration is that the company is allowed to bid for government tenders.

With regard to corruption, the owner feels that the current president is seriously trying to improve the situation – *“I see already that we are evaluated on our technical ability and not on offering personal benefits.”* Applying for permits at the central government is now a much more transparent process, and there have been reforms in policy making. As in business matters, everything is digital – *“if it is digitised, they can’t ask for money, so it’s protected against corruption.”* At the same time, it will take a long time before the anti-corruption drive is effective at the implementation level of government officials – *“the small corrupt officials still exist.”*

3.5 Food processing – frozen crab production (7-100 employees)

This crab processing company is located in an unmarked building in a small, poor village near the coast in Cirebon. The interview is held with the owner, a young man from the village.

The crab is processed by peeling and dividing it into 5 main parts, *“like chicken.”* The crab is frozen and then supplied to a large seafood exporter in Gresik (Surabaya, East Java), which is the only buyer. This firm is one of the big seafood exporters in Indonesia and offers the owner *“a really low price, which gives me a very small profit margin, only 1%.”*

The owner refers to the exporter as his *“partner”* because they provided him with a cold storage facility, equipment and instructions on how to use it. The plastic containers and food processing equipment such as masks and gloves needed to process the crab hygienically are also provided by exporter. The *“partner”* has an official in the village to check that the owner is doing what has been agreed. There is no written contract between the owner and the exporter – *“it was given to me because they trust me. There is no agreement.”* He cannot sell crab to other buyers *“because the cold storage is owned by the exporter.”*

Internal capabilities

The owner says he is very experienced in fishing and processing crab. He handles the sorting and cold storage correctly. His products are standard export quality, which he checks himself – *“my company has high standards.”*

The owner has 7 permanent staff and a network of piece workers (subcontractors), mostly women, from around 100 families in the village, who regularly work for him. He keeps the number of fixed employees as low as possible – *“the risk is that if the crab stock is not available, I still have to pay the staff costs.”* In the crab processing unit, he has some 100 workers every day peeling and packing the crab. The working day starts at 8:30 and continues until all the stock is processed. Sometimes they have to continue the next day,

but only until 17:00. When the stock is processed, the subcontractors go home and the production hall is empty – *“permanent staff are too expensive.”*

The supply of crab depends on wind conditions. The large exporter has capital and owns 16 fishing boats. It costs about 10 million rupiah per trip. The owner usually buys the fresh crab from these boats, but sometimes rents a ship himself. The operational cost of this is 15 million rupiah for 8 days’ fishing, as far as Sumatra. He pays the crew of 7 in advance and they bring him the crab on their return. If the crab is provided by his rented ship, the profit margin is 15%, but if he is supplied directly by the fishermen, it is only 1%.

The peeled crabs are then sorted and packed. The company processes an average of 15 tons of crab per month. Because the crab is not always available, there is work for only around 15 days per month. In exceptional cases, there can be 200 people working. The owner pays the workers 15,000 rupiah (1.12 USD) per kilogram – *“an experienced worker can peel 10 kg per day.”*

The owner has to comply with the exporter’s *“standard operating procedures,”* which are very strict. The official on site ensures that hygiene procedures are being followed. For instance, the peelers need to wash their hands with fresh water and soap, then with chlorine and alcohol, and then dry them with a towel/paper.

In other places in the village, people peel crab at home, but *“for his company, the workers are not allowed to peel at home, just on the company premises.”* The hygiene practices in the households are not well maintained, bringing problems of contamination and pollution of chemical substances – *“if the crab is contaminated, my partner will say we have problem. That’s why they have strict procedures on peeling.”*

The exporter created this crab supply system and the owner manages the local subcontractors and households – *“I arrange the employment.”* He provides everything according to the rules and regulations – *“I am just following instructions.”* He liaises with the families because *“I am familiar with the situation.”* There are five other entrepreneurs in a similar line of business in the coastal area.

External business and institutional environment

The owner is aware that he is in a relatively difficult situation, but does not want to expand his business and find other buyers, because the exporter gave him the storage facility. The agreement with the exporter affected his confidence and the partner company is preventing expansion. Some people from a business association of young entrepreneurs have referred to his situation as *“the exporting firm having a monopoly”* and suggested that he find other buyers. They also suggested that he go to the bank and find new investment capital. However, the owner is worried and afraid of changing the situation. He has only primary level education – *“that’s why I am still afraid.”*

A company visit during the interview was not possible; the team was not allowed to see the cold storage and processing facility. The owner has to ask permission from the exporter’s official – *“we cannot just go in with visitors unless we get permission from the partner.”* He feels uneasy with the official who *“is constantly checking on him.”* The official often says that the exporter gave him the cold storage, *“so we have to protect it.”*

3.6 Textiles – batik (40 employees)

This company produces batik in Cirebon, a secondary city some 150 km east of Jakarta. The owner, who has a good reputation in Cirebon, started the company 40 years ago, as a batik production workshop and shop. Today, the owner has extended the premises to incorporate a restaurant and some tourist attractions, such as a workshop where visitors can make batik themselves. The interview is held with the owner.

The production of batik has a long tradition in Indonesia. It is considered as a craft and an art, but also has practical uses. Its diversity of patterns, colours and textures reflects the different Javanese local cultures. The batik from the company in Cirebon is more colourful, with red and green dominating, than the batik from Solo and Yogyakarta, *“which is more brown and mahogany.”*

The company produces two different types of batik. The first is traditional batik according to standardised motifs or *pakems*. The traditional pakem method is rich in patterns, very labour intensive and difficult to produce – *“like jazz music, it has its own particular style.”* Pakem batik is considered an art form and its production requires a high degree of skill. The second is a new type of batik, which involves *“simple non-traditional patterns.”* It is not about technology but about using non-standardised designs with fast production techniques – *“it’s kind of the cheap version of batik.”*



Some 10 years ago, the owner added the simplified batik to the company’s portfolio, and today only 15% of production is traditional pakem. The owner regrets that this figure is quite low. The problem is not related to demand, which is still high, but to the limitations of his production capacity – *“with my current labour force, it’s not easy to maintain our standards and strict regulations for pakem batik.”* There is a decline in production because *“women are not interested any more in working in batik using the traditional method.”* His experience is that most of the younger generation do not understand the meaning behind the pakem batik. The change in batik production from traditional to the new fast way is happening automatically – *“it is a huge change.”*

The owner feels that the women who come to him looking for work *“have no interest or concentration to do traditional pakem.”* This phenomenon is happening not only in Cirebon but all over Indonesia, including traditional batik centres such as Yogyakarta and Solo – *“making easy batik was a trend that came in.”* The owner provides training for new staff, but he finds that when he offers them a job making standardised batik after completing their training, the trainees turn down the offer. *“Actually the problem is not their ability, but their willingness to pursue it as a profession. Making standardised batik is about patience.”* The owner sees a change in the employment structure in Indonesia today – *“the young ladies are more interested in working in the shopping centres.”*

Despite the change to *“cheap and easy”* batik, the company’s profits have not been affected over the years.

The high quality pakem products, sold in low volumes because it is not possible to mass produce them, still provide a high profit margin. In the case of a limited edition, the price can be very high. A pakem batik sheet can sometimes fail during the production work. Although in these cases the original idea failed, *“the end product is sometimes still very good, because it’s a work of art.”* One pakem batik can compensate for the loss of another. The price depends on the value that the customers place on the work. For the cheap batik, it is the other way around – *“the productivity of this company increased a lot because we produce the same amount with fewer people.”*



Internal capabilities and innovation

Although there is still a lot of demand, *“I have a real problem with finding workers.”* Some 10 years ago, the owner employed 120 people, but today the workforce is only 40. To make things more difficult, there is also a high staff turnover. In the past year, half of his staff have left. They have no formal employment contract, *“so they can quit at any time.”* The government does not require a formal contract – *“legally yes, but practically, no.”* The labour union in Indonesia does not intervene.

The owner feels that using job advertisements to find new labourers is not effective. His approach is to ask employees whether they have friends or family who need work, recruiting via word of mouth. He feels that his loyal workers come not only for the wage, but also for the positive and well-organised working environment. He organises an annual family trip for the staff and every four months they have a company dinner together.

In the past five years, he has invested in more effective marketing, launching a website and refurbishing the shop and showroom. In addition, he has extended his shop to incorporate a restaurant and a children’s playground – *“I want to attract shoppers here, who come here as tourists, not only for the batik but also for the workshop, restaurant and to sit and relax. This is my innovation.”* He serves traditional food in the small restaurant. He regrets, however, that this kind of outlet in Cirebon is unable to attract as many tourists as those in Bandung, for instance.



He feels that it is hard to attract tourists to Cirebon, but *“our new target customers are schools, where 200-300 students come here on school trips.”*

Recently, he also introduced several computerised production and stock management systems. One new technology is product barcodes, which the company is relatively late in adopting. This is because the price is incorporated in the barcode, whereas the tradition in batik sales is to bargain – *“in the village, we have a very strong tradition of bargaining.”* Since the barcode sets the price, there is no need for bargaining.

In the new, simplified batik production, the owner still aims to develop high quality designs, and has produced several original ideas and initiatives. For instance, being a Harley Davidson fan, he created a batik with the Harley logo – *“it is a new batik design. There is a lot of demand because many of our customers like Harley Davidson a lot.”* Inspired by Australian aboriginal designs, he has created another batik in this style and hopes to sell it to Australia.

As well as new batik patterns, he now also develops new products, such as cushions, children’s clothes and shoes, the latter because he saw some visitors wearing them. Some of the batiks designs use dollar symbols.

For his investments in the business, he never sought credit from a bank, following advice from his parents. When he was young, his father always said, *“Don’t rely too much on the bank.”*

In the future, the owner expects that his four children will take over the business. His daughter is a designer already and works for him. His son recently graduated from the École supérieure des arts et techniques de la mode (ESMOD), a design school in France.

External business and institutional environment

"In the golden era" of his company, 1988-1997, demand for his batik was very high – "some customers even paid up front to guarantee delivery." At that time, he had a representative office in Singapore and exported to Burma. 60% of the batik imported from Indonesia to Burma came from his firm in those days. However, the office closed because of the Asian crisis in 1998, and now he no longer exports on a regular basis, although international buyers do come occasionally. They ship the batik to neighbouring Asian countries, mostly non-pakem batik because "it's difficult to export the traditional pakem batik."

There is a lot of competition in Cirebon, but he was the first entrepreneur to develop his shop into a more recreational attraction. For him, *"competition is positive."* There is no cooperation between the batik shops *"because we have our own labour, techniques and clients."* All the producers in Cirebon monitor each other's products – *"it's normal, it's competition"* – but every company has their own speciality, which makes it difficult to copy each other's designs – *"they all try to follow me, but they can't do it."* Sometimes other companies try to poach his employees.

The government does not make his business operations more difficult. He understands why the government imposes taxes and follows the rules accordingly. However, the government does not support the batik industry – *"they just acknowledge the importance of our industry."* The local government sees his company as one of the key firms in Cirebon. Indeed, the owner is proud that many Indonesian presidents have visited his company, and photos are on display of Siapa, Soeharto and Megawati, although *"Jokowi has not yet come."*

3.7 Food processing – fruit juices (13 employees)

This business processes mango, lemon, tamarind, soursop and other tropical fruits into purée and juices. The owner started the business in 1996 with only 7 employees and limited capital, but with *"enthusiasm, spirit and hard work."* His first product was coconut jelly. Shortly thereafter, he started processing tamarind into purée and juices.

In 2003, the owner participated in a training course on food processing run by the Ministry of Agriculture, as part of an agricultural post-harvest research programme – *"I was doing the training on mango processing."* After the workshop, which provided him with important knowledge, he began processing mango and soursop into purée, which was new to him. The purée is an intermediate product used for fruit candy, jam and jelly. He involved a group of neighbouring farmers as suppliers. The first trials were not successful – *"we failed because we didn't use the technology properly and did not keep the product in cold storage."* The production techniques were not hygienic. To overcome these problems, he developed his own cold storage facility (an example of 'frugal innovation'), described below.

After 2012, he started to produce ready-to-drink fruit juice in small bottles as a finished product, which he still does today. The clients for the fruit purée are the large food processing companies in Indonesia (CV Berry Indo Sari and Cila Sasosino Perdana). These companies process the purée further into drinks for the end consumers. Due to the different season of each fruit, the owner provides a schedule to large companies of the available fruit. He has signed an MoU with several buyers. If one type of fruit is only available in certain months, he gives priority to processing that fruit.

He also sells the fruit directly to supermarkets, hotels, restaurants and cafés. His production depends on the purchase orders – *"I will not produce if there is no order."* He first sends a sample to the customer. After approval, he starts production. The company packages the juice in containers of 5 and 20 kilos, and at present employs 13 people.

The production process is quite straightforward for mango, lemon and soursop. The owner buys the fruit from middlemen, who source it from farmers, mostly from central Java. The workers wash and manually cut or slice the fruit. The fruit is then pressed and filtered by machine. After the fruit is pressed, *“some customers need pasteurisation and others can do without. Most of it is non pasteurised.”* The process is slightly different for each type of fruit in terms of pressing and filtering, but the machines are the same – *“the fruit washing machine is the same for all the fruit, as the brushes are adjustable.”*



The plastic containers and bottles are filled by hand, production levels being too low to merit automation.

The company is officially registered as a CV (Commoditer Venootschap), which means that the company's assets are mixed with personal assets. It is a matter of choice whether an entrepreneur wants to register as a CV or PT (Perseroan Terbatas, limited liability company). In this case, *“we still use family assets in the business.”*

The owner is happy with the location of the business – *“the location is our heritage, so I have to keep this land.”* The firm is close to the fruit farmers and accessibility is good because it is on a major road. The juice and purée are transported in the company's small trucks.

Innovation

As mentioned, the hygiene challenge was that the products' storage life was only 3 months. Lacking investment money to buy a cold storage facility, in 2003 he constructed his own cold storage room by wrapping and isolating a small room with styrofoam and putting in two old air conditioners – *“I used a modified room, air-conditioned to make it cold.”* The self-constructed cold storage only helped slightly because the temperature was not below 14 degrees – *“however it was not according to the regulation, which was 2 degrees.”* He used this traditional storage until 2012, while saving money for a more advanced facility.



In 2012, he had sufficient savings to buy a 3.5 x 3.5 m cold storage facility, in which he can store 11 tons of products. The investment required for this was 150 million rupiah (12,000 USD).

There is an even newer 'aseptic' technology available that the owner is aware of, a machine that packages the juice into small bottles free of micro-organisms. The process does not involve pasteurisation, which reduces the taste quality. The machine costs approximately 5 billion rupiah (375,000 USD). With this technology, it is possible to store the product for 1 year outside without cold storage. The quality is better and there is no need to transport it in a refrigerated vehicle. *“It is more cost efficient, but the capital investment is huge. It would be good to invest in the machine, and save the cold storage electricity costs.”*

Internal capabilities

The owner has a degree in food processing, but he says that the food processing course in 2003 was very useful for gaining practical knowledge. The company does not have a formal organisational structure for the owner and the workers. The owner does all the management and administrative work.

The skills of the workers are *“not very specialised.”* They live nearby in the agriculture areas. There is very little staff turnover – *“some of my staff are very loyal and have been working here since the beginning.”* The owner has concluded formal employment contracts with the workers, because of bad experiences in the past – *“people from farms have low education levels and are sometimes aggressive. That’s why we have to educate them by having formal contracts.”*

The workers offer ideas to improve the business – *“during the noon prayer, they’re all there and we pray together. After they pray, I ask my workers for ideas to improve the business.”* The owner motivates the workers – *“after we sign the contract, I tell them to be honest and responsible.”* If the workers work for 40 hours a week or more, the owner gives them a bonus.

His product has been certified for health safety by the provincial health department – *“we don’t add any chemicals to the purée and juice.”* The health auditor comes every 2 years. The products also have a halal certificate, which is issued by an institution called MUI (Majelis Ulama Indonesia) – *“they do a test: no drugs, no bad content, the material is certified as halal.”* Both certificates are printed on the bottle. The company did export some quantities to Japan, where the juice was tested – *“we got repeat orders from them. So our product is okay. Japan is very demanding.”* Other large companies, such as Sun Fresh, conduct the same process in examining the company. The large food processing companies also regularly check the hygiene practices.

The owner is aware that there are many other final products possible from his fruit purée. He would like to expand his ability to produce new products and try new marketing techniques. He has a franchise idea for juice counters in shopping malls, but to do so, he will have to increase production – *“I realised that if we do the franchise, we need to expand capacity and storage.”* Then again, he is almost 60 and thinking of retiring. He has a son who studied food technology and will take over the business soon. His two daughters will get married and will probably not work in the business.



External business and institutional context

The company has little interaction with the government about permits or tax. The owner pays income tax only, which presents no difficulties. He does not have to pay corporate income tax because his revenues are too low. He never sought bank credit for investment capital, as his family and his faith do not allow it – *“because of shariah laws, we don’t want to be in debt.”*

The owner attended several exhibitions in Indonesia and established links with the big companies who are now his main customers.

He is a member of a food processing value chain association called Masterbo. The 80 members of the association include farmers, food processors and food selling companies, uniting all actors of the value chain.

The association helps farmers, for instance, with problems regarding seeds or plantations, engaging experts from Universitas Pasundan (UNPAS) and Universitas Padjadjaran (UNPAD) near Bandung. Masterbo also organises meetings for fruit processing producers with entrepreneurs, fruit farmers and retailers – *“we come together and discuss processing formulations, label designs or packaging. We complement and help each other.”* He is the coordinator of these meetings for the nearby regions of Indramayu, Majalengka, Cirebon, and Subang. Masterbo covers only West Java because it is a programme funded by the agricultural department of the provincial administration.

He participated in a short training course on a food safety management and product quality certification system called HACCP (Hazard Analysis and Critical Control Points). The trainer encouraged the participants to invest in more advanced machines, but these are costly: the initial investment would be around 25 million rupiah (1,800 USD) for the initial stage of the system.

The owner is not aware of the implementation of innovation policies for small businesses in Cirebon. He knows about an innovation programme in another region of Java, which provides financial assistance for machines, equipment and operational vehicles – *“the question is, why is it not happening in this region?”* The local government does not help him, for instance, in promoting products, *“but that’s ok.”*

3.8 Car components and parts – metal chair springs (108 employees)

This company produces car parts for the automobile industry in Indonesia and is located in Cikarang, Jakarta. The company was established in 1988, with four employees. They produce a range of specialist parts, by bending and stamping metal wires. The main product at present is zig-zag springs, an interior material for car seats. Over the years, the company has grown incrementally. In the 1990s, it started to supply a large car manufacturer, PT Mewah Indonesia, a Japanese and Indonesian joint venture company. At that time, the company had 15 employees. The company has continued to grow and is now a medium-sized enterprise, with 108 paid staff.

The interview is held with the managing director, who believes firmly in a bright future for his company *“because humans cannot live without vehicles.”* The development of the company tracks the development of the economy – *“it just follows the state of the economy, but also the politics, because the economy is dependent on the political situation in Indonesia.”*

Today, the company has various customers, in particular several large automobile firms, such as Toyota, Honda and Daihatsu – *“we also supply Daihatsu’s suppliers.”*



The orders are based on a purchase order system. The customers know the company’s capabilities in terms of production. Before placing an order, they give instructions and a drawing of the products to be made – *“normally, the customer gives all the specifications.”* The company then develops a sample. If it is approved, a purchase order is confirmed – *“then the transaction happens, the price negotiations.”*

Internal capabilities

The company belongs to a group of three factories, owned by an Indonesian family. The shareholders are the family members. The companies are organised as separate entities, having their own budget, managing director, management team and organisational structure. Every plant has its own product engineering staff, production manager and R&D department. The interviewed company has a management team of eight.

The company was actually the family's first factory. Over the years, the family established new companies at other locations because there was sufficient demand for car parts. It was not possible to extend the original premises, because the location is too small and is located in a residential area.

The family deliberately established new separate factories in new industrial zones close to large car manufacturing plants, to reduce transportation costs. The provincial Department of Industry has developed several industrial zones in greater Jakarta. Later, the second factory also became too small and the family set up a third factory in another newly established zone – *"we just continued to chase the customers."* All the three companies have a general product, but also specialised products.

Production workers are not difficult to recruit in Indonesia, nor is there much staff turnover, *"because our business is family oriented."* The holding company also encourages a family oriented approach. It conducts regular audits of human resource practices, including labour management, working conditions and safety.

The company keeps up with the current technology in stamping and bending – *"it's actually not that hard because we can also do it manually, as we did in the beginning when we didn't have the machine."* Nowadays, they have the best technology and machines available, compared to other competitors. A few years ago, the company bought *"some technology that no one in Indonesia has yet."* In order to maintain production capacity, given the substantial cost of labour, they have to increase efficiency and productivity.

The company has five main competitors in the area of iron wire bending in West Java. In the stamping of metal parts, there are many others. In their efforts to keep up with the competitors, the company's strategy is to maintain focus on three principles: cost reduction, timely delivery and product quality.



Cost reduction means working as efficiently as possible, timeliness means delivery quantities and scheduling must be precise, and quality means products must meet agreed standards. The company has received several awards from the Department of Industry and the province of Jakarta for quality control, innovation and labour. They have also won prizes from the group for outstanding performance.

They are well-informed about other companies because the managing director sees these firms not only as competitors, but also as informants. In the group of companies, the relationship is more a mentoring one – *"it's not taking each other down, but more like collaborating."*

External business and institutional environment

Initially, the company did not seek credit from a bank, relying on savings to fund their investments, but in 2003, the managing director started to use bank credit. Although he finds it easy to work with the bank, *"the interest rate is 11% per year. Actually, all entrepreneurs are having problems with the interest rate."* This high interest rate is reflected in the price of the product. The managing director cannot do anything about the

interest rate because it is government policy – *“I do not have any difficulty finding a bank to arrange credit, because the bank comes here.”* At present, they own several machines bought outright by them and others bought on credit. The bank is only able to lend 70-75% of the price, with the company’s own capital required for the balance.

The company also subcontracts on a regular basis. Several previous employees have set up their own small businesses of 10-20 workers each in the surrounding area, which was encouraged by the company because it allows more flexible production capacity without fixed labour costs. The company has a mentoring system for the subcontractors, guiding them through all the production process, quality control, supply of input materials, management and administration tasks. There are 12 current subcontractors. Some are specialised in a certain product, *“which depends on the skills of the subcontractors. Some of them they do the bending parts, some of them do the lets.”* The company does not want to incorporate the subcontractors because it is the family group’s strategy to subcontract simple production work – *“the family group does that and they are the inspiration.”*

As regards the external institutional context, *“we have had no complaints about the government ever since we started.”* They do what is required by the government, such as environmental permits. Similarly, there are no complaints from the workers in the surrounding area.

The company received several free training courses from government departments on labour management practices and innovation. Since they are already a legal entity, they are registered on the government’s records and were contacted directly. They also receive help in promoting their business by attending exhibitions.

A production worker can suggest innovations to the R&D team, or the company itself can propose technology innovations to improve the business.

The government promotes innovation in the automobile industry through their policy of providing training, to enable expansion – *“from making simple products to more innovation and more sophisticated products.”* The government does not provide technical training, but focuses on motivation. The company receives technical training from the family holding firm, which also sometimes asks the company about technical problems – *“we discuss solutions together.”*



With respect to the institutional environment, the managing director feels that what most Indonesian entrepreneurs need is certainty – *“the business context now is very uncertain.”* They would like the government to bring greater certainty in particular in terms of location zoning, business permits and interest rates. The government does in fact have a dedicated zone for industry, but land prices here are high, *“which is really a problem for small and medium sized enterprises wishing to relocate.”* It would be helpful if the government could provide a dedicated location for SMEs, with more manageable land costs and payment terms – *“where they can lease the land, or stay there for free for a certain number of years and then repay it.”*

4. Analysis and conclusions

The aim of the qualitative study on innovation in manufacturing SMEs in Indonesia is to support the quantitative research part of EIP-LIC, as well as to share insights with similar research projects at other academic institutions. This could help researchers to validate, compare and complement existing theory in literature and research design and hypothesis development with contemporary bottom-up realities on the ground in Indonesia, as perceived by manufacturing SME owners and managers. Earlier qualitative studies in the framework of EIP-LIC have been carried out in Kenya, Ghana and Tanzania, Vietnam and South Africa, applying the same qualitative approach and report format, and enabling comparison across the countries of study in the DFID project. The report may also serve as reference material for reflecting on and interpreting the outcomes of quantitative research in this area.

This growing collection of insights from the various countries demonstrates how innovation processes and mechanisms are manifested within manufacturing SMEs, and reviews the internal capabilities and external environment, including formal institutions, the business system and the informal institutional context. The research framework is reflected in the list of semi-structured interviews (see Annex 1). In addition, the owners and managers shared their stories outside this framework and advanced issues that are relevant and interesting for current research work. The qualitative reports of all 10 African and Asian countries of study are available for researchers and a wider audience, downloadable from the project website⁵.

It is important to note for the analysis and conclusions below that the validity of qualitative research should not be considered in terms of sample size and representativeness of the cases for the total manufacturing SME sector in Indonesia. Qualitative research in general does not claim to collect and analyse data from a representative sample. Instead, on a case-by-case basis, qualitative analysis provides exploratory (deductive) insights into issues, processes and systems in a bottom-up way that helps to suggest theoretical concepts for the local context. It may suggest original or overlooked and policy-relevant factors (variables) and conditions to follow up in the quantitative analysis. Against this background, the selection of cases involved ‘information-oriented’ sampling, as opposed to ad-random sampling, aiming at developing a diverse yet comparable dataset with regard to subsector, enterprise size and innovative activities.

In the paragraphs below, several key trends and notable patterns across the Indonesian SME cases are analysed. It is important to note that this offers a first analysis of the qualitative empirical material from Indonesia within the DFID project context, which is to be followed up in more depth with a view to developing or complementing academic articles. The chapter concludes with initial policy ideas and implications and several observations with regard to the set of further research questions to be considered within or beyond EIP-LIC.

General observations

A first overall observation during the preparation of the fieldwork in Indonesia, which is comparable with Kenya, Ghana, Tanzania and Vietnam, was the issue of the large numbers of informal companies with less than 10 employees in the manufacturing sector in Jakarta and Cirebon. These enterprises do not belong to the target group of the research. Moreover, there is also a relatively high number of large companies. The

⁵ www.tilburguniversity.edu/dfid-innovation-and-growth/

observation previously made of the so-called ‘missing middle’ of SMEs⁶ (see paragraph 2.1), is also an issue in Indonesia.

Another complicated issue was determining the exact number of employees of SMEs. Unlike firms in many other countries, where employees have fixed or formal contracts, the number of employees is often very flexible and depends on the order portfolio. The rattan and the crab processing cases are good examples. The company has a core staff for management and administration and holds a pool or network of employees.

Some Indonesian companies deliberately do not wish to expand to over 100 employees. They actively encourage workers to leave the company and start for themselves as subcontractors. The small companies are then mentored by the larger contracting company.

Innovation definition

Most interviewed owners and managers in the Indonesian companies described in chapter 3, in different ways, introduced new products, processes and technology in order to improve and expand their business operations. Some would clearly qualify as innovation, while others would not, depending on how innovation is defined and assessed.

In advanced economies, innovation is typically measured by R&D expenditures and number of patents of new products or processes, as proposed in the Oslo Manual⁷ (OECD, 2005). From a radical technology perspective, much of the ‘newness’ introduced in the Indonesian cases would not qualify as innovation. Such an assessment would in any case have been impossible because the owners do not systematically record R&D expenditures and have not registered patents.

Taking a broader and economic perspective on innovation, viewing it in terms of incremental adoption and adaptation or of new combinations of existing technologies creating value (Szirmai et al., 2011), it is evident that the new elements introduced in the interviewed companies resulted in improved and expanded business operations. As described in emerging innovation theories on LICs, much innovation depends *on an aggregation of small insights and advances through ‘learning by doing’ rather than on major technological inventions* (Carayannis et al., 2003).

Despite increasing interest in the literature, the exact definition of innovation in LICs remains an issue in theory (Çapoğlu, 2009) and for its application by the researchers in EIP-LIC. The broadest possible definition of innovation, from an economic perspective, referred to in the qualitative research section, is everything new that the company does to raise productivity and/or to stay ahead of its competitors. Or, as Fagerberg et al. (2010) put it, *“Innovation is often seen as carried out by highly educated labour in R&D intensive companies with strong ties to leading centres of excellence in the scientific world. Seen from this angle, innovation is a typical ‘first world’ activity. There is, however, another way to look at innovation that goes significantly beyond this high-tech picture. In this broader perspective, innovation – the attempt to try out new or improved products, processes or ways to do things – is an aspect of most if not all economic activities. In this sense, innovation may be as relevant in the developing part of the world as elsewhere.”*

Assuming the broader perspective on innovation in EIP-LIC, box 1 presents several definition elements to assess innovation in an LIC context for the analysis of the cases in this report. Moreover, Kaplinsky and Morris (2001) identify five types of innovation: (i) process innovation, aiming at improving the efficiency of transforming inputs into outputs; (ii) product innovation, leading to better quality, lower price and/or more

⁶ This phrase has been used relatively loosely in economic development discussions, meaning a lack of SMEs particularly in the developing world. See: http://www.africa.com/blog/investing_in_africa_defining_the_missing_middle/

⁷ <https://www.oecd.org/sti/inno/2367580.pdf>

differentiated products; (iii) business practice innovation, implying new ways to organise the business and attract new clients; (iv) functional innovation, assuming responsibility for new activities in the value chain, such as design, marketing and logistics; and (v) inter-chain innovation, moving to new and profitable chains. These types of innovation are taken into account in the analysis in this report.

In many innovation definition and measurement documents, such as the OECD Oslo Manual (OECD, 2005), an explicit distinction between product, process and other types of innovation is made. However, distinguishing the types of innovation in the manufacturing SME cases interviewed in the framework of EIP-LIC so far (Kenya, Ghana, Tanzania, Vietnam, Indonesia, India and Uganda) was not such a clear and simple matter. It is more common to see an integrated combination of several types of innovation, where one type of innovation triggers or enables another, such as the introduction of a new process (technology) that results in the launch of new products, requiring the reorganisation of the workshop and staffing.

Box 1: Innovation newness, process and value creation

A cross analysis of definitions in innovation theory from recent decades (Voeten et al., 2011) shows that innovation is repeatedly typified by three key elements: newness, process and value creation.

Addressing the first element, Kotabe and Swan (1995) argue that innovation can be investigated in terms of both **newness** to the company and newness to the market or world.

Regarding the second element, the innovation **process**, all owners and managers themselves initiated, managed and owned the innovation process within the unit of analysis, their company. They developed the idea, sometimes inspired by others, started to run small experiments and trials and eventually implemented the new product or production technique on a commercial scale. As is often the case in incremental innovation in developing countries, this was not a planned and formalised process involving a pre-defined innovation strategy and an R&D department.

The third element, **value creation** of innovation, is evidenced either through lower input costs or higher sales revenues (Porter, 1985). Higher profit through new premium products of better quality, or appealing to a certain fashion, increases competitiveness.

Analysing the Indonesian cases for newness, process and value creation, as suggested in box 1, is one possible way to assess whether the observed new phenomena within the companies qualify as innovation or not.

1. The pupil and student backpack company launches new products with small design modifications on an on-going basis. These new designs are copied or inspired by other backpacks available at the market. This qualifies as incremental innovation, which is ‘new to the firm’, rather than new to the world or market. The generated value is also owned by the company. The continuous introduction of new designs is necessary for survival in the market. The question arises as to whether this could be labelled as product innovation, or simply product ‘improvement’. There is some experimentation with online sales, which is a marketing innovation.
2. The rattan case did not innovate in terms of new products, new processes or technological innovation. However, the company has introduced a quite ‘radical’ new human resources policy which modified the HR practices of having a number of permanent staff into contracting day workers, which saves on production and labour costs. This is an example of management innovation to maintain competitive position.
3. The paper bag printing company purchased a new machine that could do different print jobs than other nearby firms. The machine enables them to specialise in products for larger corporate businesses as

compared to their competitors. This incremental and new-to-the-firm innovation assured the company a stable client network of its own.

4. The land map company introduced new drone technology that resulted in the production of cheaper products and services while maintaining the original group of clients. This would not have been possible with the old technology, due to new government regulations. The technology already existed in the market but the owner developed a much cheaper version with local expertise and simpler materials (also known as ‘frugal innovation’). It is technology adaptation and qualifies as ‘new to the firm’ process innovation. It is the only case of an innovation at the global technological frontier.
5. The crab processing company introduced new technology, equipment and cold storage process technology. However, it was all ‘imposed’ and provided by the buyer/partner who claimed exclusive rights to the processed crab for a low price. In terms of innovation process management and the lack of ownership by the firm, this is not considered as innovation. As a consequence, the owner was also not able to appropriate value from the new technology and practices.
6. Batik is a traditional craft in Indonesia. The owner does not have other options than to introduce and produce cheap batik as a practical solution to address the shortage of workers. Moreover, he extended his premises with a restaurant and playground to provide the clients with a more ‘recreational experience’, which is a marketing innovation. This assured his position as the ‘special place for batik shopping’ in Cirebon. The owner updates designs on a regular basis, involving artistic work. The question arises as to whether the new designs could be labelled as product innovation, or simply product ‘improvement’.
7. The fruit juice producer struggled with the cooling issue and creatively developed a cold storage facility by himself from an old AC and an isolated room (an example of ‘frugal innovation’). Later, he bought professional cold storage equipment, which is considered a technology innovation. The new equipment enabled the company to broaden the range of higher quality products. The introduction of the new technology and products was an incremental innovation, which was ‘new to the firm’.
8. The car part company handles straightforward supplying to car manufacturers. There are no breakthrough technologies or small improvements to improve productivity or assure higher quality.

4.1 Trends and patterns in the cases

The cases show various similarities and differences, which are informative and relevant for EIP-LIC and other innovation related research and policy projects on manufacturing SMEs in LICs.

It is notable that all new types of products and processes in the cases involve ‘new to the firm’ and incremental innovations. The innovations were not the result of radical technological inventions and were not at the technological frontier, except for the drone technology. Most cases involved management, organisational and marketing innovations at firm level. From an economic and development point of view, their importance is evident in terms of value creation, assuring the survival or expansion of the firm while generating employment opportunities. These micro level innovations have significant positive impact on the direct actors involved.

The management and ownership of the innovations in the cases was within the company, except for the crab processing firm. Ownership of the process makes it more likely the firm itself will be able to appropriate the

value created. This was not the case in the crab processing plant, where the dominant actor in the value chain, the exporting firm, appropriates most of the value chain profit.

Most companies produce goods to order. Ideas for new products are mainly acquired from the market: customers come with requests and suggestions, or the owners talk with clients. Innovation is therefore mostly demand-driven as opposed to supply-driven.

The Global Competitiveness Report 2015-2016 of the World Economic Forum suggests that Indonesia is becoming more industrialised and competitive on the global market and qualifies as an efficiency-driven economy. Firms have become larger and are starting to exploit economies of scale. The idea is that productivity has to increase because wages rise with advancing development and firms innovate accordingly.

The characteristics of an efficiency-driven economy are clearly seen in the car parts and rattan cases, where the firms are trying to do more with less people. The other interviewed firms are still struggling with processing raw materials and getting the right technology and machinery in order to produce on a competitive scale. This is more in line with a factor-driven economy. These companies are competing on factor endowments, unskilled labour and natural resources, as earlier described in Kenya, Ghana and Tanzania. The cases in the latter countries are more involved in trade (export) and processing of basic products based on their endowments. These activities are labour intensive, requiring unskilled low-cost labour and low productivity. Against this background, the set of Indonesian cases explored fits in the Porter et al. (2002) economic stage classification of both a factor-driven and an efficiency-driven economy.

Internal capabilities

The motivation to start a business is similar for several owners in the cases: to have something of their own and to have more control in lives. Most owners have past working experience in their current line of business. Once they acquired sufficient skills and a network of clients, they opened their own business. Some owners have a technical background and prefer to stay close to the technical and design process. Others have a management background and are more likely to consider expansion. Survival and expansion of the business goes hand in hand with innovation. The owners are constantly looking for solutions to improve quality and efficiency.

In all cases but one, the crab processing firm, it is the owner who initiates, coordinates and manages the new ideas, including preparations for the innovation, technical details, and the product launch. Few companies have a design or R&D department or a specialist employee with this function.

The labour force is flexibly organised in many of the interviewed companies. Permanent staff are kept at a minimum. In the event of large orders, workers are temporarily hired for day jobs. There are no labour unions active in the cases. Although this 'management innovation' may have a direct positive effect for revenues, there are also some downsides. For instance, there will be less feeling of ownership and less commitment from the employees to contribute to the survival or expansion of the company.

The workforce in the companies are mostly unskilled and skilled labourers in the production workshop on the one hand, and well-educated staff in management and marketing on the other. Several owners face the difficulties of a high turnover rate of unskilled production workers. In fact, there are plenty of employment opportunities in Indonesia for lower educated workers, as reported by several of the managers and owners.

All companies have some form of a rewards and bonuses system. The younger generation of Indonesian workers are not interested in craftsmanship or manual work. Some companies keep their production outside Jakarta because of the improved availability and low cost of unskilled and motivated labour in these areas.

The Indonesian education system does not deliver workers trained in the skills required for production work in the firms interviewed. Graduates from colleges and universities do have theoretical knowledge but lack practical skills, so most companies have to provide additional in-house training.

The interviewed owners and managers are well-informed about technological possibilities through the internet or informal contacts. They have ideas and plans for upgrading and expanding their companies. Typically, the companies possess technology and machinery that they have owned for a long time. The technology is still able to deliver a certain minimum product quality. Occasionally, new machinery is bought from profits and savings.

The cases also show the active involvement of women in the management of enterprises. There are many female owners and managers, and they do not face many 'gender issues' in Indonesia. Some of the female workers are expected to stay at home after marriage. The female managers all consider women ultimately responsible for raising children and running the household.

External business environment and formal and informal institutions

All the interviewed SME owners and managers indicate that the business environment is challenging in Indonesia. At the same time, they are not really concerned about government rules and regulations. These cause some hindrance but the regulatory framework does not obstruct business operations. The tax policies and regulations are straightforward and as long as entrepreneurs comply with the rules, there is little trouble. Applying for permits can be more cumbersome in terms of bureaucracy and corruption. The perception of the government is quite positive, in particular the new president.

None of the interviewed owners complain about corruption, although at the lower governmental levels it is still prevalent. The central government takes serious steps to combat corruption, which is appreciated by the enterprise owners.

No interviewed company received government support for innovation. Some of them enjoyed other forms of support, including export promotion and technical training. The owners and managers see the benefit of these activities, which enable them to make big steps forward.

Several owners have practical problems with the government concerning urban planning and zoning of economic activities. Three of the eight cases report that their business is no longer tolerated at their current location. The government does not provide alternative locations, or the designated zones are much too expensive for small or medium sized business, which prevents the businesses from investing and innovating.

Companies are reluctant to borrow money from banks, for various reasons. Some have religious reasons not allowing them to pay interest on credit. Banks actively contact entrepreneurs to offer loans, but generally it is not considered an attractive source of finance for SMEs due to the high interest rates and complex paperwork. SME entrepreneurs find investment money from savings and via informal loans from family members. They usually invest incrementally just before or after receiving large orders.

Branch associations are an important source of information and business contacts and contracts for the owners and managers of the cases. Most of them are members of an association. Interaction with formal technology institutions, as suggested in the innovation systems literature (Lundvall, 1997), does not happen. Many SME owners and managers indicate that they would like to cooperate with universities to undertake research at their premises, sharing research insights, for instance. There is very little spill-over of technology as a result of co-operation between firms, subcontracting or other forms of collaboration within value chains, business clusters or networks.

4.2 Policy issues – insights for policy makers to consider

Various ministries within the Indonesian government have defined and implemented innovation policies, but these seem not to reach the SME owners that were interviewed, although some have participated in government programmes aiming at technology development for SMEs. A possible barrier may be a technocratic top-down view of technology in such programmes, an issue that is also the case in Kenya and Vietnam, for instance. The target companies are seldom consulted, and in fact they prefer to stay at a distance from the formal institutions, with the result that, in the interviewed cases, SME owners do not benefit from any innovation policies. An alternative bottom-up approach is one idea to address this problem.

The interviewees are aware of state of the art technology but cannot afford the high costs of such machines. Moreover, those that do have the money available are reluctant to invest it, because of uncertainty in both micro and macroeconomic terms. The policy challenge is to support the businesses to invest in advanced technology, enabling them to process local basic materials into high quality manufactured goods for internal consumption and export. Locally made products still have the reputation of being of lower quality.

Another issue is whether the overall policy approach, directing Indonesia towards an innovation-driven economy, is the most effective and appropriate means to develop the manufacturing SME sector. This relates to the relatively low levels of product and process innovation in the cases. Policy makers may wish to consider supporting SMEs in other forms of innovation, such as business practice (management and organisation), functional innovation, etc. As argued in the introduction to this report, it is desirable to develop innovation within manufacturing SMEs. Some believe that technological innovation is critical for SME development and catch-up with advanced economies. Technological innovation has, however, been traditionally concentrated in developed countries, given the costs and risks involved in stimulating technological innovation. Foreign sources of technology account for a large part of productivity growth in most countries, also witnessed in the Indonesian cases. Therefore, the technology development process could be supported by tapping existing technical and product knowledge.

Moreover, the stories and experiences of the owners and managers raise the issue of whether an innovation-driven and new to the world innovation approach should be the way forward in innovation policy. Most of the required technology is already available, but elsewhere in the world. In fact, all owners in the cases are well informed about the technological possibilities of their business. Without too much difficulty, the owners and managers find the technology themselves by drawing on various sources of information (the internet, informal business contacts and trade fairs). Moreover, the companies themselves refine and adapt the existing technology once acquired. So, although setting up technology development projects and programmes may help SMEs, the availability of technology is not perceived as a barrier to innovation by the owners and managers.

It seems that the notion of growth as ‘manna from heaven’ as reflected in convergence theory, see the earlier rejected exogenous growth model of Solow and Swan (Fagerberg et al., 2010), might work after all because of the free and widespread access to knowledge and technologies via the internet. The knowledge itself is available to local companies in Indonesia. The institutional context, providing trust, predictability, stability and access to finance is more of a problem in preventing investment in technology and innovation and thus hindering ‘convergence’. However, the ‘manna from heaven’ of technology developed elsewhere may not address the local needs or issues in Indonesia.

Innovation climate

How then can the innovative capacity of SMEs in Indonesia be increased? According to the World Bank (2010), an efficient government innovation policy should address the overall innovation climate, which goes

beyond traditional science and technology policy. At the same time, government action can usefully focus on a few generic functions to help SMEs to grow. In particular, it can facilitate the articulation and implementation of innovative initiatives, since innovators need basic technical, financial and other support.

The government can also reduce obstacles to innovation in competition and in regulatory and legal frameworks. Government-sponsored research and development structures can respond to the needs and demands of surrounding communities. Finally, the education system can help form a receptive and creative population. Regarding actual innovation policy development, there has been a considerable amount of work in developing countries, such as the World Bank (2010) report 'Innovation Policy: A Guide for Developing Countries'.

The lack of relevant education is a problem for the companies interviewed, who feel there are insufficient skilled workers and operators to work with modern machines. SME owners and managers complain that university and college graduates lack the required technical and craftsman's skills, exposure to modern technologies, and an entrepreneurial and creative attitude.

As mentioned earlier, several ministries and agencies are engaged in efforts to develop and promote innovation policy, usually labelled as Science, Technology and Innovation (STI) policy. Despite considerable efforts in developing strategies and plans, actual implementation is challenging, due to the limited availability of public budgets and knowledgeable staff. The various ministries, including those responsible for science and technology, industrialisation and export, typically have to sort out how the implementation of the policies should be organised, which remains a subject of debate.

Nearly all SME owners and managers suggest that creating a stable and predictable institutional context would be an efficient and effective way to promote innovation in Indonesia. Whatever innovation policies and programmes are developed, the results of such policies will be undermined by the weak and unreliable wider formal institutional context.

Another policy idea emerging from the DFID project is that several owners and managers suggest focusing not on governmental policy makers only, but on direct advice to SMEs on how to improve their business. One idea is to develop non-governmental business information exchange networks and platforms, establishing contact between entrepreneurs in Indonesia and beyond, to facilitate discussion and deals within the various sectors. SME owners suggest that the DFID project could establish a network of all SME owners and managers contacted during the implementation of EIP-LIC and create a website for them to stay in touch with each other.

There are also ideas proposed by external parties to spur MSME productivity growth over the medium term. One route would be to encourage the formalisation of small firms. Lessening red tape through simplification of the licensing process and lower tax compliance costs would help. Avoiding excessive rises in the minimum wage in provinces where it is already at a reasonable level would also be important. Looking forward, it would be useful to remove rigidities in the formal labour markets, while moving to some form of unemployment benefit system to insure workers against job-loss risks. A second route would be to boost investment. Clarifying property rights for real estate, and making the information collected by the credit bureau available to all financial institutions would ease access to finance. At the same time, the development of financing alternatives such as venture capital, leasing or micro-finance would enhance credit supply. The poor state of infrastructure, in particular in the transportation and electricity sectors, is also perceived as an important impediment to investment and could be remedied by increasing public infrastructure spending on cost-effective projects. A third route would be to enhance the quality of human resources. The country suffers from a lack of skilled workers, and policies should aim both at increasing the pool of workers and making education and training institutions more responsive to evolving labour-market demand. Indonesia has a long

tradition of supporting MSMEs, but responsibilities between the different levels of government and within the central government need to be clarified to minimise overlap and inefficiencies. A rigorous assessment of existing programmes would allow schemes to be consolidated and scarce public funds to be directed to their most cost-effective uses (Mourougane, 2012).

Research issues - insights to address the research questions

The qualitative analysis of Indonesia, and also the earlier studies on Kenya, Ghana, Tanzania and Vietnam show the many internal and external factors supporting or hindering innovative behaviour of owners and managers of manufacturing SMEs. The econometric analyses and the mathematical models approach within EIP-LIC implicitly seek correlations and causal relationships between independent variables such as internal capabilities, a favourable policy context, the availability of finance and technology, and the occurrence of innovation and innovativeness as dependent variables. The associated economic theories explain and predict economic outcomes as a basis for further policy development.

However, a limitation is that the claims of econometric analyses are true only *ceteris paribus* — that is, they are true only if there are no interferences or inhibiting factors. Critics say that the most important methodological issue is the simplification, idealisation, and abstraction that characterises econometric research. However, the qualitative research element of this project shows the reality of numerous inhibiting factors. This is problematic once research outcomes are translated into policy, from which true impact is expected, and constitutes an emerging methodological challenge in terms of developing meaningful and effective policy recommendations in the EIP-LIC research project.

Theme 1 'Innovation Systems'

In reviewing the innovations in the cases against innovation systems theory, one would expect the SMEs to be surrounded by a network of institutions in the public and private sectors whose activities and interactions initiate, import, modify and diffuse new technologies (Freeman, 1987). However, it appears that the SME innovations in Indonesia are mostly in-house activities. The same phenomenon has been observed in Kenya, Ghana and Tanzania. In these mostly factor-driven economies in Africa, innovation is observed in advanced techniques that process primary products into competitive ones on the world market. However, Indonesia is a more efficiency-driven economy, in which companies seek state-of-the-art technology to save on labour costs and raise productivity and higher product quality. In the Indonesian SMEs, one would expect formal technology institutions to facilitate this process. However, although government S&T institutions do exist, it seems that their developed technologies are not required by SMEs, whereas no similar institutions exist for the less-developed technology they actually require.

The cases suggest several firm-level factors play a critical role in the engagement of incremental innovative activities, rather than supporting institutions. The innovation process is initiated, managed and owned by the company with little external involvement or support from other businesses. Informal contacts, even within formal institutions, play a key role in technology transfer. It is the owners who develop ideas for innovation, with employees playing only a limited part by suggesting improvements at the operational level.

The motivation, contacts and international exposure of the owner are key factors in engagement in innovative activities. Moreover, the availability of funds as a result of profits is essential. Regarding the risk-taking of their innovation projects, most owners and managers are confident about the market opportunities in Indonesia, the region and beyond.

There are no cases of collaborative innovative activities. Although the companies are open to sharing information about their needs, most of the owners/managers avoid cooperation with other companies.

Regarding external networks, only one case (the crab processing firm) has been involved in collaborative innovative activities. There is some spill-over as a result of the 'partnership'. The larger exporting company makes technology available but is appropriating most of the value. This raises the question of the development impact. In fact, many more examples of subcontracting exist in Indonesia, in particular in the car parts industry.

There are virtually no links between the interviewed SMEs and public sector actors, such as universities, governments or NGOs, as presented in the 'Innovation Systems' analytical model. The so-called innovation system, as a co-evolutionary network of actors, does not exist. Instead, the business system actors and informal institutions play a key role in providing information, technology, credit and overall stability and predictability. The role of these actors could be further explored in EIP-LIC research, with particular regard to the doing, using and interacting (DUI) approach in learning and innovation processes, as suggested by Lundvall et al. (2009).

The outcomes of the qualitative inquiry suggest that technology and underlying knowledge may not be the problem. Regarding the diffusion of technology, most of the entrepreneurs are well-informed about technological possibilities and are able to import the technology by themselves with little difficulty, provided funds are available. For most of the technical problems faced by the SMEs, a technical solution has already been developed somewhere in the world, so there is little need to develop local 'new to the world' technologies. There is therefore little need for intermediaries to bring producers and users of innovation/knowledge together. There are few 'breakthrough' technologies that could be disseminated on a wider scale, and the owners and managers seek to meet their specific needs with available technology. They can identify where to source the technology and have suppliers. In some cases, a local technician can make a copy of the machine. There is little local innovation for local problems.

Theme 2 'Finance for Productivity Growth'

Finance is considered a critical constraint by most interviewed companies in Indonesia. In all companies, the owners aim to introduce new products and raise productivity because they see business opportunities in doing so. Learning and acquiring the technology is not such a problem, but the finance is, in particular for expensive state-of-the-art technology to be able to face international competition.

The SME owners develop their businesses through small, incremental investment. They do not take the leap of a large scale investment. Although there are well developed ideas for innovation and confidence in the market, investments cannot be made because of the uncertainty of the long term economic and political outlook. Instead, SME owners invest by using the profit of larger orders they have, or by using the contract upfront to secure supplier credit.

With regard to managerial practices and innovation decisions, many entrepreneurs do little in terms of in-depth calculations and forecasts. Most owners are self-made entrepreneurs, due to a combination of their limited knowledge of financial management and the uncertain and fast-changing economic and institutional context. It is very difficult to make a financial forecast in the Indonesian context and with an eye on possible exports, as the regulations are unclear and change continually.

Unlike M-Pesa in Kenya, SMEs in Indonesia do not use mobile banking for business transactions, although most company owners do benefit from the recently introduced internet-based banking services.

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Annexes

Annex 1: List of questions for semi-structured interviews

A. BASIC INFORMATION

1. Name of business and owner, location, legal status, years of operation, types of products, manufacturing subsector, productive activities, number of employees, management structure, some indication of turnover and profit and average investment size.
2. Short history and background of business model. How is the company generating value? Position in a value chain if applicable, suppliers, major clients/markets.
3. Did the company grow/expand in recent years? To what extent (why) does the owner consider his/her company as an innovative company as compared to other manufacturing SMEs in Indonesia?
4. Did the company itself introduce a new product, process or technology to raise productivity or to face competition? Provide examples of product/process/technology innovations that enabled survival/growth/expansion in the past 3 years.

B. INNOVATION

New

1. Description of the type of innovation (process, product, incremental, radical). What is new? Did some innovations enable/trigger other types of innovation within the company? Management innovation in terms of goal setting?
2. Is the innovation 'new to the world' involving inventions by internal R&D, or is it a copy, adaptation or adoption of an existing product or technology?
3. How do the owner, employees, clients and others actors perceive the newness? (just a small improvement or as a 'breakthrough')?

Process

4. Idea: Where did the idea and motivation for the innovation come from? What were the first steps in the idea formulation and who initiated these? What was difficult and what was easy?
5. Testing: What were the subsequent steps in testing? At what point in time did it become clear that the new product or process would become a success? On what basis did the owners decide to further implement/commercialise it? Did the owner try new things that failed?
6. Commercialisation: what were the steps towards the implementation? What confidence/trust provided back-up? What was difficult and what was helpful?

Value

7. How do product/process/technology innovations create value for the company?
8. Did the innovation increase productivity, if so how? (lowering production costs per unit, labour/capital input)?
9. Did the competitive position change as a result of the innovation, if so how? (via premium products, better, newer fashionable products or new export markets)?

C. INTERNAL CAPABILITIES (FIRM LEVEL CONDITIONS)

What are the internal strengths and weaknesses with regard to the innovativeness of the company?

Dynamic capabilities

Sensing and shaping opportunities for product/process/technology innovations

1. To what extent do you (and the employees) see the need/urgency to be innovative?
2. How do you or your employees identify new business/innovation opportunities?
3. Who is actively involved in identifying these opportunities?
4. How is raising productivity and competitiveness linked to identifying opportunities for innovation?
5. How do you target a new market segment? How do you consider the competitiveness of your company?
6. How is your company adjusting to customer needs?
7. How does the company select the ideas that it is willing to invest/innovate in?
8. Who is involved in this process?

Reconfiguration of the company

9. How do you adjust by being innovative to the surrounding business environment?
10. How do you share knowledge within your company?
11. How are employees informed about new developments?
12. How does your company train employees to adjust to new developments?

Goal setting

13. Do you have an implicit or explicit goal setting system to improve performance?
14. How do you pay employees for performance? (more salary, rewards)
15. How do you increase motivation? Is there intrinsic motivation (ambition, ownership) and external (money) motivation?

Slack time

16. Do you give employees time to develop or try out a new approach or develop new ideas about products or services, or business processes?
If yes:
 - What exactly was expected from employees during this time? What kind of activities should employees undertake during this time?
 - Did all the employees get some time or was it restricted to a specific group; and if so, which group?
 - Why did this establishment give employees this time? What was the goal/idea behind it?If no:
Have you ever considered giving employees some time to develop new ideas? If yes, what was the reason for implementing it? If not, why not?

D. FORMAL INSTITUTIONS

How does the owner perceive the opportunities and threats for product/process/technology innovations of the surrounding business, policy and regulatory context in Indonesia?

1. Is the owner aware of governmental policies/programmes in Indonesia that specifically aim to stimulate product/process/technology innovations in manufacturing SMEs? What is the owner's idea and perception of these governmental policies (programmes/projects)?
2. Does the company actively participate in, or benefit from, such governmental policies/programmes/regulations? (specify in what ways these stimulate the company's innovativeness)
3. What role do intellectual property rights and patent laws play in your innovation activities? Does the owner aim to patent innovations? If so, which patent office is used? Does the owner find intellectual property rights and patent laws helpful for innovation activities? Does the owner respect the intellectual property rights of others when innovating? If not, why not?
4. Are other generic governmental policies/programmes (not explicitly aimed at promoting innovation, stimulating education or providing access to finance) supporting the company's innovativeness in an effective way?

5. Do certain governmental policies or regulations prevent the owner from introducing and investing in innovation? What threats in terms of policy and government regulations emerged in the innovation process?
6. Does the company participate in, or benefit from, programmes or projects stimulating innovativeness run by NGOs and/or international development agencies? (kind of programmes/projects and impact)
7. How does the owner acquire knowledge and technology for product/process/technology innovations? When conducting innovative activities, does the company collaborate with formal bodies, such as universities, R&D centres, research institutes and so on? Why (not)? Which kind of organisation? Does the owner encounter any difficulties in collaborating with such organisations? If so, of what kind? Are these collaborations ultimately beneficial for innovativeness? If not, why not?

E. BUSINESS SYSTEM, SPILL-OVERS, EXPORTS

To what extent (and how) are contacts and interactions with other businesses - local, national and international - important for stimulating product/process/technology innovations within the company? Examples?

Business systems interaction

1. Has the company ever introduced a new product/process/technology to suit the needs of a local client/buyer? If yes, did the client/buyer help in any way to make these changes?
2. Has the company ever followed the advice of a supplier in introducing a new product/process/technology?
3. Does the company have active business cooperation (subcontracts)? What is the nature of the cooperation and what is the benefit? Did that involve a new product/process/technology?
4. Does the company buy from or sell to any multinational firms located in Indonesia? If yes, has the company ever benefitted in any way from cooperation with these firms to develop a product or improve production techniques?
5. Where does the company typically recruit employees? Has the company ever recruited employees from a client, supplier or competitor? Were these employees particularly helpful in improving products or production techniques? Has the company recruited employees with the explicit aim of improving products or production techniques? Where did they work before?

Location

6. How long has the company been located at the present address? Did the company move to this address or was it created at this address? What were the main reasons why the company was moved to/founded at the present address?
7. How does the presence in the location/region affect the company's performance, innovation, growth? What is the owners' perception of the dynamics of the present location/region with regard to the businesses around (micro, SMEs, large, multinational)? What is the size of the region to which the owner refers?
8. Are the other businesses in the region similar or different in terms of size, production, sector and type? To what extent do firms produce comparable goods in the region?
9. Alternatively, to what extent are these other business hindering and competing? Does the owner see them mostly as competitors? Does that imply a need for innovation?
10. Does the company buy inputs (what, quantity) from firms located in the region? What is the quality of local inputs? Did the owners ever ask a local supplier to change a product to suit certain needs? If yes, did the company help the supplier make these changes in any way?

Export

11. Has the company ever exported some of its products to foreign countries? If yes, when was the first export? Has the company exported some of its output abroad in the last year? To which countries?
12. What was the main driver of the company's decision to export? Did the company actively look for foreign clients? Did foreign clients or a wholesaler contact the company (if yes, how: website, fair, etc.)? How did the company hear about export opportunities or has the company ever been recommended to foreign clients? If the company was contacted or recommended, why was this the case?
13. Has the company ever improved an existing product or created a new product with the explicit aim of exporting it? If yes, was it at the direct request of foreign clients or to find new foreign clients? Did the company make improvements to comply with standards and regulations?

F. INFORMAL INSTITUTIONS

1. Family and friends (overseas)
2. Cultural perception of innovation. Is innovation something good? Or should we strive for stability and harmony in society?
3. Informal think tanks, informal knowledge through contacts with university experts
4. Rent seeking individuals, corruption
5. Hindering culture, traditions or customs
6. Social learning, collective learning
7. Community solidarity, craft traditions

Annex 2: List of companies interviewed

Manufacturing SMEs interviewed in Jakarta and Cirebon in chronological order (17 to 25 October 2016)

Products	# of employees	Subsector	Location
1. Backpacks	30	Textiles	Jakarta
2. Martabak Manis	10	Food processing	Jakarta
3. Land mapping	10	Data processing	Jakarta
4. Rattan products	70	Furniture	Jakarta
5. Frozen fruits	30	Fruit processing	Jakarta
6. Interior design furniture	25	Interior design	Jakarta
7. Books, cards, packages,	25	Printing	Jakarta
8. Jamu drinks	5	Food processing	Jakarta
9. Batik	40	Textiles	Cirebon
9. Fruit juice	13	Food processing	Cirebon
10. Rattan	60	Wood	Cirebon
11. Rattan	35	Wood	Cirebon
12. Crab processing	100	Food processing	Cirebon
13. Car parts	20	Automotive	Jakarta
14. Car parts	108	Automotive	Jakarta

Annex 3: DFID research questions

The DFID research project takes an ‘economics’ perspective on innovation, and involves econometric analysis of a set of variables concerning barriers at firm, regional and national levels and their causalities in terms of *innovative behaviour/capability of entrepreneurs* and subsequently innovation and productivity. This constitutes a reductionist and deductive approach in defining variables for analysis in which the impact of individual factors on innovation is assessed by applying quantitative econometric methods (*ceteris paribus*). The DFID project key research questions are grouped under two themes:

Theme 1 ‘Innovation Systems’:

- What firm-level and regional-level factors hinder or foster the engagement of firms in innovative activities?
- What is the impact of in-house innovation activities versus collaborative innovative activities or technology acquisition activities on the innovative performance of firms in developing countries?
- What is the role of economic spill-overs within clusters of firms in fostering economic growth and innovation?
- What are the most critical barriers to the process of innovation and the diffusion of technology in low income country settings?
- What types of links between the public/private sectors, universities, governments, NGOs and the private sector are more conducive to innovation activity?
- What is the role of intermediaries to bring producers and users of innovation/knowledge together?

Theme 2 ‘Finance for Productivity Growth’:

- How does the design of formal and informal financial institutions affect firm productivity dispersion across SMEs?
- What are the firm level margins that make finance matter for productivity?
- What role do observable managerial decisions (e.g. managerial practices, innovation, product market competition, product quality, technology adoption, location of the plant and the trade status) and managerial characteristics (e.g. gender, age, education, behavioural aspects) play in explaining the nexus between financial development and firm productivity?
- How does firms’ productivity respond to exogenous developments in the financial environment?
- What are the macroeconomic implications of such development experiences?